Chemical Engineering

1956



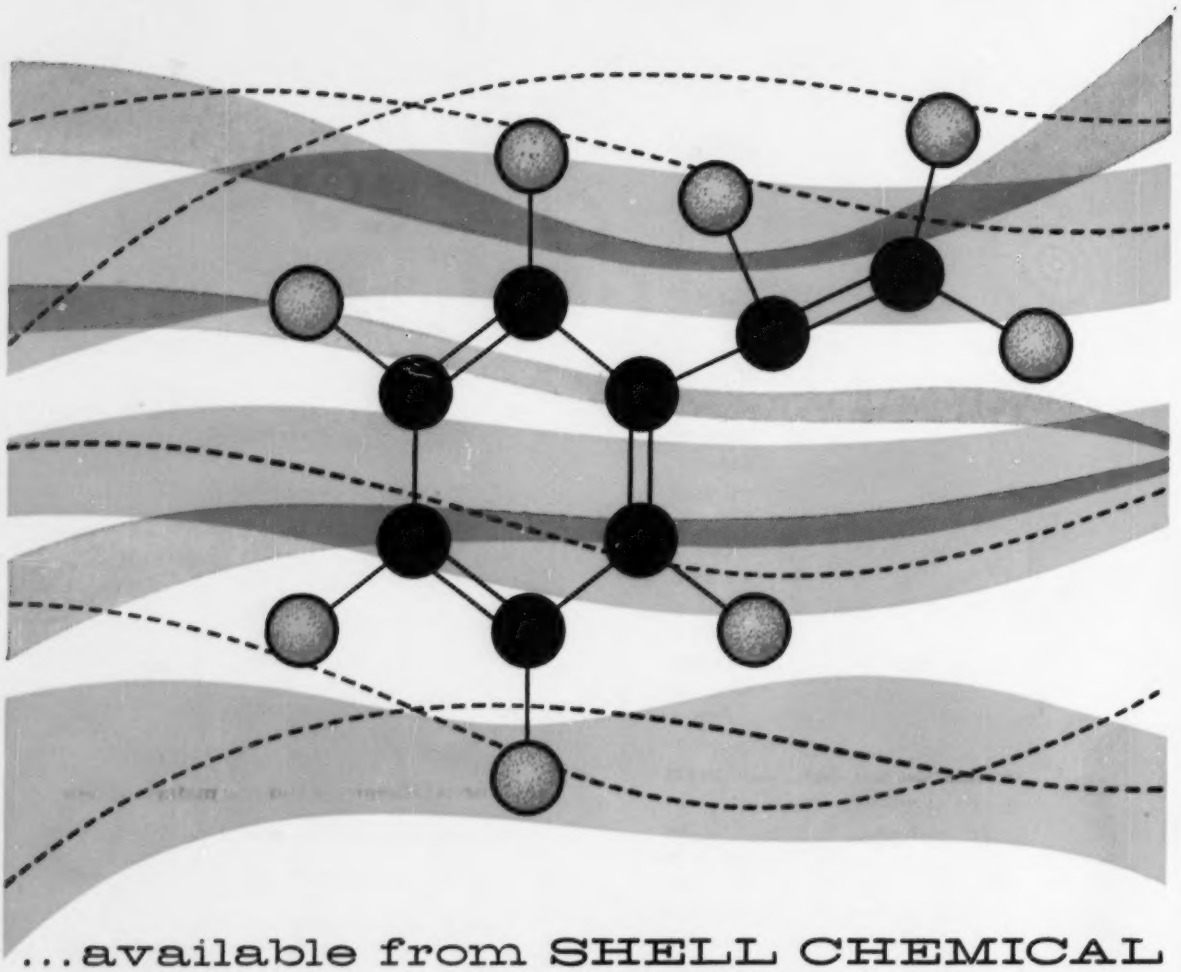
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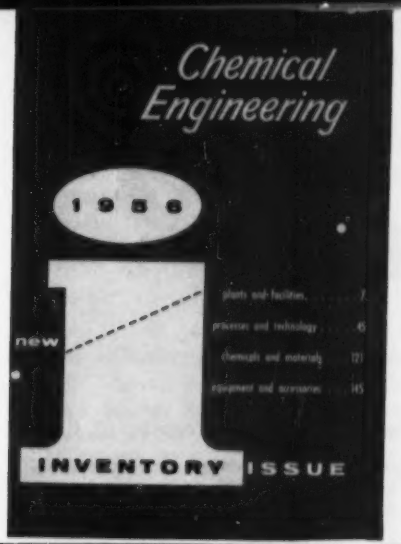
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MID-SEPTEMBER 1956

JOHN R. CALLAHAM, Editor

Permanent Reference—III

Here again is CE's Annual Inventory issue. This is the third of the special 13th issues published annually. The series has established itself as a timely—yet permanent—reference service for chemical engineers.

All material, as you have come to expect, is again condensed to a hard, factual core. Careful selection of all listings insures their value and interest to practical engineers everywhere.

You'll note a few changes this year in typography and format. These refinements are intended to increase ease and speed while you're using this reference.

Major rearrangement to increase usefulness and value involves technical literature. These listings have been categorized and are now part of the four main sections of this issue: Plants, Processes, Chemicals, Equipment. Included are more than 2,500 items of current technical literature available for your reference files.

During the coming year most of our subscribers will have occasion to refer to this issue many times. They will again find that it is a volume to be saved, that it supplements previous inventory issues, that it is indeed Permanent Reference—III.

GUIDED TOUR

Annual Issue again takes inventory of developments during the past year

Our inventory of important developments during the past fiscal year covers four phases: new chemical plant construction, process and technology advances, new industrial chemicals and raw materials, new equipment. Technical literature from manufacturers is included with each inventory.

Keeping up with new plants

Our final tally shows 803 major construction projects announced, planned, under construction or completed during the time covered by this inventory. Here's a rundown on the status of each (p. 7).

Keeping up with new processes

Technological advances and new processes total 336 in this year's count. These

Please turn page

Chemical Engineering

Mid-September 1956



are the news that makes progress in the chemical process industries. Our boiled-down list concentrates the facts for you (p. 45).

What have you missed in chemicals?

Have you kept up with improvements in old chemicals and news of developments in new chemicals and raw materials? Our inventory will introduce or reacquaint you with 209 of them that made news for chemical engineers this year (p. 71).

What have you missed in equipment?

We can show you. This year's bigger and better inventory brings you a terse review of the 410 developments that won through the screening which insures the interest and value of our equipment news to practical chemical engineers (p. 145).

To update your technical files

Current technical literature this year is inventoried right in the category where it belongs. This comprehensive array of data is all yours—free. The table of contents here will direct you.

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Chemical Engineering (with Chemical & Metallurgical Engineering) is published monthly with an additional issue in Mid-September by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder, Publication Office: 99-129 North Broadway, Albany 1, N. Y.

▶**Executive, Editorial and Advertising:** 330 West 42nd St., New York 36, N. Y. Donald C. McGraw, President; Paul Montgomery, Executive Vice President; Joseph A. Gerardi, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; J. E. Blackburn, Jr., Vice President and Circulation Director.

▶**Subscriptions:** Write to Chemical Engineering—Subscription Service, 330 West 42nd St., New York 36, N. Y. Allow one month for change of address. Please show position and company connection on all orders.

Single copies $1 in U. S., Possessions and Canada; $2 in all other countries. U. S. and possessions, $3 per year, $4 for two years, $5 for three years; Canada, $4 per year, $6 for two years, $8 for three years; other Western Hemisphere and the Philippines, $15 per year, $25 for two years, $30 for three years; all others: $25 per year, $40 for two years, $50 for three years.

Second class mail privileges authorized at Albany, N. Y. Printed in U.S.A.

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To keep pace with the chemical, petrochemical and chemical process industries, more engineers subscribe to Chemical Engineering than to any other publication.

Actual laboratory pre-tests prove you can . . .

Blend liquids into dry materials fast, in one operation . . . without lumps

Getting perfect dispersions of liquids into dry materials without lumping has almost always entailed extra steps for pulverizing, mulling or screening, etc.

But P-K's new *Liquid-Feed** Twin Shell Blender eliminates those extra, costly operations. Now, in a one batch operation, you can achieve complete dispersion of liquids in a matter of minutes. Blender is charged through large dust-tight openings that allow easy access to shell interior for cleaning. Complete Liquid-Feed assembly is quickly removed by means of a spring loaded mechanism.

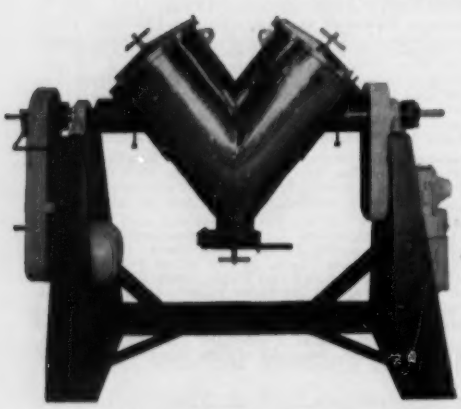
The Liquid-Feed blender is simple in concept. Liquid flows from a feeder tube within the bar onto a revolving distributing disc. Centrifugal force flings a fine spray outward. Dry materials tumbling in the Twin Shell receive liquid in controlled amounts at all times. The wire cage, spinning at high speed, prevents the formation of lumps before or after liquid is introduced.

Results? More perfect blends, in a fraction of time previously required. Want proof? P-K's Process Division maintains a complete lab to assure accurate, predetermined performance to meet your liquid-feed blending requirements. P-K will conduct, without obligation, laboratory test-blends with your materials.

Experimental testing will provide operational procedure and scale-up data. All test reports are held in strict confidence when desired, and, whenever convenient, testing may be supervised or witnessed by your personnel. P-K will submit complete factual test results, including samples of test-blends. Write direct to our Research Department.

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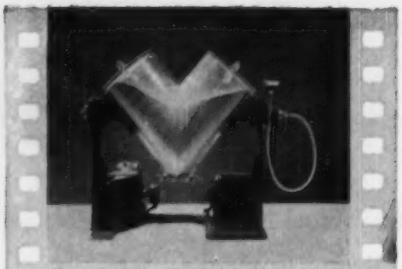
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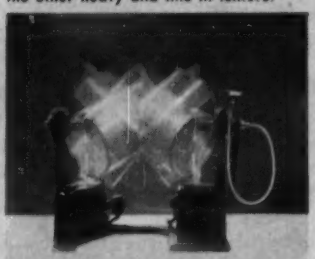
This production model is in stainless steel. Standard liquid-feed twin shell blenders are available in most commercial metals. Sizes range from 3 to 50 cu. ft. working capacity.

Patterson Kelley
Chemical and Process Division

Twin Shell Blenders • Autoclaves • Pilot Plants • Heat Exchangers
Ribbon and Double Cone Blenders • Lever Lock Doors



8 qt. blender is loaded for test with dissimilar materials, one lumpy and light, the other heavy and fine in texture.



Complete uniformity is obtained in a few minutes by dry blending. Lumps are broken up by fast-spinning intensifier bar's wire "cage" assembly.



Liquids are then introduced into the dry blend during rotation by gravity-feed. Distributing disc disperses liquid evenly. Wire cage prevents clumping.



Average blending time is approximately 15 minutes to obtain perfect liquid-feed mix. One step operation eliminates pulverizing, mulling and screening.



Discharging is easy. Stainless steel liquid-feed assembly ejects instantly, rinses in seconds. Seconds more to wipe clean the smooth, easy-to-get-at interior.

1956 INVENTORY

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803 LISTINGS . . . CE's comprehensive inventory of major new plants and facilities . . . who's building what, and where . . . which way the chemical process industries are moving . . . future markets for equipment, raw materials . . . future sources for products.

HERE is CE's seventh annual inventory of major new plants and facilities in the chemical process industries. Its 803 listings—nearly double last year's tally—really point up the industry's surging expansion activities and show you which way they're going. It takes in all major projects costing more than $200,000, planned, underway, or completed during the last six months of 1955 and the first six of 1956. To insure completeness and accuracy, this list was checked by leading companies and by CE's own field editors across the country.

1956

New Plants and Facilities

INVENTORY

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• Cement

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Alpha Portland Cement	Clementon, N. Y.	Cement	.....	Expansion by 300,000 bbl/yr. completed late '55.
Alpha Portland Cement	St. Louis, Mo.	Cement	.....	Plant on stream. Capacity 2.5 million bbls./yr.
Arizona Portland Cement	Rillito, Ariz.	Cement	$4,000,000	Expansion by 1 million bbls/yr. Additional capacity completed mid-'55.
Bessemer Limestone & Cement	Walford Sta., Pa.	Cement	.....	Expansion on stream. Additional capacity over 1 million bbl/day.
Calaveras Cement	San Andreas, Calif.	Cement	4,000,000	Expansion of new rotary kiln. Capacity increased by 30% to 1 million bbl/yr. Completed mid-'56.
California Portland Cement	Mojave, Calif.	Cement	12,000,000	Plant completed Oct. '55. Additional expansion on stream by Aug. '55. Capacity 2 million bbl/yr.
Carolina Giant Cement	Harleyville, S. C.	Cement	.....	Expansion on stream. Additional capacity of 1,200,000 bbl/yr.
Consolidated Cement	Fredonia, Kans.	Cement	2,650,000	Expansion of 1,300,000 bbl./yr. added. Completed Sept. '55.
Consolidated Cement	Paulding, Ohio	Cement	.....	Plant expansion; 1¼ million bbl./yr. added capacity. On stream Fall '56.
Diamond Alkali (Cement & Coke Div.)	Painesville, Ohio	Portland cement	.....	Expansion of capacity by 42% (800,000 bbl./yr.) by mid '56.
Dragon Portland Cement	West Stockbridge, Mass.	Cement	10,000,000	Expansion underway.
Dragon Portland Cement	Northampton, Pa.	Cement	1,000,000	Expansion; 600,000 bbl/yr. additional capacity completed mid '55.
General Portland Cement	Chattanooga, Tenn.	Cement	1,500,000	Expansion; 1¼ million bbl./yr. additional capacity. Completed early '56.
General Portland Cement	Ft. Worth, Tex.	Cement	.....	Expansion; additional capacity of 1¼ million bbl./yr. Late '56 completion date.
Giant Portland Cement	Harleyville, S. C.	Cement	5,000,000	Expansion underway. Capacity boosted 60% to 1.1 million bbl./day.
Hawkeye-Marquette Cement	Des Moines, Iowa	Cement	.....	Additional capacity: 500,000 bbl./yr. Completed mid '56.
Huron Portland Cement	Alpena, Mich.	Cement	.....	Additional Capacity: 3 million bbl./yr.
Ideal Cement	Ada, Okla.	Cement	6,500,000	Expansion of plant. Additional capacity: 1,500,000 bbl./yr. completed mid-'56.

Ideal Cement	Baton Rouge, La.	Cement	3,500,000	Plant expansion. 500,000 bbl./yr. additional capacity completed late '55.
Ideal Cement	Boettcher, Colo.	Cement	4,500,000	Plant expansion; 1 million bbl./yr. additional capacity completed mid '56.
Ideal Cement	Houston, Tex.	Cement	8–10,000,000	Expansion of facilities. Additional capacity 1,500,000 bbl./yr. by late '56.
Ideal Cement	Mobile, Ala.	Cement	5,500,000	Plant expansion; 150,000 bbl./yr. Additional capacity completed mid '56.
Ideal Cement	New Orleans, La.	Cement	1,350,000	Plant expansion.
Ideal Cement	Okay, Ark.	Cement	6,000,000	Plant expansion has doubled original 1.3 million bbl./yr. capacity.
Ideal Cement	Redwood City, Calif.	Cement	6,000,000	Plant expansions. Additional capacity: 1½ million bbl./yr. Completed by early '57.
Ideal Cement	Superior, Neb.	Cement	5,000,000	New unit; capacity 1 million bbl./yr. Completed mid '56.
Ideal Cement	Trident, Mont.	Cement	6,000,000	New plant; Capacity 1½ million bbl./yr. Completed mid '56.
Keystone Portland Cement	Bath, Pa.	Cement	.....	Expansion; completed early 1956.
Lehigh Portland Cement	Burnell, Fla.	Cement	.....	Expansion; additional capacity 1,100,000 by mid. '55.
Lehigh Portland Cement	Mason City, Iowa.	Cement	.....	Capacity boosted by one-third to reach 3 million bbl. by '57.
Lehigh Portland Cement	Union Bridge, Md.	Cement	15,000,000	Expansion; additional capacity 2 million bbl./yr. by mid '56.
Lone Star Cement	Bonner Springs, Kans.	Cement	3,000,000	Expansion; additional capacity 660,000 bbl/yr. Completed late '55.
Lone Star Cement	Dallas, Tex.	Cement	.....	Expansion; additional capacity 1,400,000 bbl./yr. on stream late '55.
Lone Star Cement	Greencastle, Ind.	Cement	.....	Expansion; additional capacity 600,000 bbl./yr.
Lone Star Cement	Hudson, N. Y.	Cement	.....	Expansion; additional capacity 1 million bbl./yr.
Lone Star Cement	Houston, Tex.	Cement	7,000,000	Expansion; additional 1,100,000 bbl./yr.
Lone Star Cement	Lake Charles, La.	Cement	14,000,000	New plant; capacity 2 million bbl./yr.
Lone Star Cement	Nazareth, Pa.	Cement	10,000,000	Expansion; additional capacity 900,000 bbl./yr.
Lone Star Cement	Roanoke, Va.	Cement	.....	Additional capacity 800,000 bbl./yr.
Lone Star Cement	Spocari, Ala.	Cement	.....	Additional capacity 800,000 bbl./yr.
Longhorn Portland	Longhorn, Tex.	Cement	.....	Additional capacity 700,000 bbl./yr.
Marquette Cement	Brandon, Miss.	Cement	.....	Expansion; 450 ft. kiln. will double capacity to 2.5 million bbls./yr. On stream by May '57
Marquette Cement	Cape Girardeau, Mo.	Cement	7,000,000	Expansion; To add 1.25 million bbl./yr. by late '56. Raises total production to 3 million bbl./yr.
Marquette Cement	Des Moines, Iowa.	Cement	1,750,000	Additional capacity; 450,000 bbl./yr. mid '56. 500,000 bbls./yr. late '56.
Marquette Cement	Milwaukee, Wis.	Cement	7,000,000	New plant includes new A-C-L-kiln for first time in U. S. System is a double-pass preheat process. Capacity 1.25 million bbl./yr.
Marquette Cement	Oglesby, Ill.	Cement	7,000,000	Additional capacity; 1.2 million bbl./yr. by late '56.
Medusa Portland Cement	Dixon, Ill.	Cement	8,000,000	Additional capacity; 1 million bbl./yr.
Medusa Portland Cement	York, Pa.	Cement	2,000,000	Additional capacity; 750,000 bbl./yr. by late '56.
Missouri Portland Cement	No. St. Louis, Mo.	Cement	.....	Expansion to 5 million bbls./yr. Completed summer '56.
N. E. Portland Cement	Rockland-Lincolnville, Me.	Cement	.....	Additional capacity; 1½ million bbl./yr. On stream Oct. '55.
North American Cement	Howes Caves, N. Y.	Cement	.....	Additional capacity; 540,000 bbl./yr.
Oregon Portland Cement	Oswego, Ore.	Cement	3,000,000	Additional 700,000 bbl./yr. by early '56.
Peerless Cement	Detroit, Mich.	Cement	7,500,000	Additional 1 million bbl./yr. by late '56.
Penn-Dixie Cement	West Des Moines, Iowa.	Cement	4,500,000	Expansion to raise new capacity to 2.3 million from 1.4 million bbls.
Penn-Dixie Cement	Petoskey, Mich.	Cement	400,000	Additional capacity; 800,000 bbl./yr.
Permanente Cement	San Bernadino Co., Calif.	Portland cement	12,000,000	New plant planned. Capacity 2 million bbl./yr. by late '56.
Permanente Cement	Permanente, Calif.	Cement	4,000,000	Plant expansion by addition of sixth kiln increased production 20%. by 1.4 million bbl./yr. On stream mid-'56.
Permanente Cement	Victorville, Calif.	Cement	21,000,000	2 million bbl./yr. plant under construction. Due in Fall '56.
Pittsburgh Coke & Chemical	Neville Island, Pa.	Cement	.....	Expansion of facilities underway.
Pittsburgh Plate Glass (Columbia Cement)	Zanesville, Ohio.	Cement	.....	Expansion by 1 million bbl./yr. Completed by July '56.
Republic Cement	Drake, Ariz.	Cement	6,500,000	Plant on stream; turns out 2,500 bpd. grey cement; 750 bpd. white cement.
Riverton Lime & Stone	Riverton, Va.	Cement	10,000,000	Plant planned with annual capacity of 1.5 million bbl./yr.
Rosenfeld Sand & Stone & El Danphinais	Northern New England.	Cement	10,000,000	Plant under construction; capacity 1½ million bbl./yr.
Texas Portland Cement	Echo, Tex. (near Orange)	Cement	2,500,000	Expansion underway in Oct. '55, adding 500,000 bbl./yr. to capacity.
U. S. Steel (Dragon Cement)	Western, Mass.	Cement	10,000,000	Plant planned Oct. '56.
Universal Atlas Cement	Gary, Ind.	Cement	.....	To expand capacity by 3 million bbl./yr.
Universal Atlas Cement	Lorain, Ohio.	Cement	12,000,000	Plant planned Oct. '55.

• Fertilizers & Fertilizer Chemicals

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Air Reduction (Ohio Chemical Pacific)	Berkeley, Calif.	Liquefied nitrous oxide	$500,000	Plant construction underway. On stream April '56. 70 million gal./yr. Stamford process.
Allied Chemical & Dye (Nitrogen Div.)	Hopewell, Va.	Pebbled ammonium nitrate		Pebbled ammonium nitrate facilities ready for production by late '56.
Allied Chemical & Dye (Nitrogen Div.)	Omaha, Neb.	Nitric acid, nitrogen fertilizer solution, nitrophosphate solutions		Facilities near completion. In operation Fall '56.
American Cyanamid	Brewster, Fla.	Triple superphosphate		Plant construction underway. 200,000 tons/yr. Capacity: On stream by mid '57.
American Metal (Southwest Potash)	Carlsbad, N. M.	Potash	2,500,000	Mill and mine expansion underway Fall '56. On stream Feb. '56. Production increased by one-third.
Apache Oil & Helium	Phoenix, Ariz.	Ammonia	10–12,000,000	Facilities planned.
Atlantic Refining	Philadelphia, Pa.	Ammonia	11,000,000	75 ton/day plant planned as of April '56.
Atlas Powder		Ammonia	6,750,000	Unit under construction. ODM certified.
Borden (Chemical Div.)	Seattle, Wash.	Formaldehyde	1,000,000	Plant to be completed late '56 will double firm's West Coast output. New production will come to 36 million lb./yr.
Brea Chemicals	Brea, Calif.	Nitric acid		Plant on stream Sept. '56.
Brea Chemicals	Brea, Calif.	Prilled ammonium nitrate	2,000,000	Plant on stream Dec. '55. Capacity 50,000 tons/yr. Prilling tower (200' high and 30' square) is called tallest in world. Engineered by Chemical & Industrial, Cincinnati, Ohio.
California Spray-Chemical	Richmond, Calif.	Aqueous and anhydrous ammonia, ammonium nitrate and sulfate solution, pelleted fertilizers.	16,000,000	Plant construction underway. On stream summer '56. Pelleted fertilizer unit will use the French Potasse et Engrais Chimiques process for the first time outside of Europe.
Calumet Nitrogen	Hammond, Ind.	Anhydrous ammonia, nitrogen solution	9,000,000	300 tons/day anhydrous ammonia; 200 tons/day nitrogen solutions. On stream mid-'56.
Central Farmers Fertilizer	Georgetown Canyon, Ida.	Calcium metaphosphate	10,000,000	Reduction processing plant under construction. Capacity: 100,000 tons/yr. Furnaces completed by late '58.
Columbia River Chemicals	Pasco, Wash., Attalia, Wash.	Ammonia	12,000,000	Late '55 on stream date delayed. Capacity: 160 tons/day ammonia; 110 tons/day urea; 140 tons/day ammonium sulfate.
Columbia—Southern Chemical	Natrium, W. Va.	Anhydrous ammonia		70 tons/day plant on stream. Marks firm's entry into ammonia production.
Consolidated Mining & Smelting	St. Helens, Ore.	Ammonia, urea	20,000,000	Plant planned: 200 tons/day ammonia; 100 tons/day urea.
Delhi-Taylor Oil	Moab, Utah	Potash	Multi-million	Mining and milling venture planned.
Delta Gas Chemical	Buras, La.	Fertilizers	8,800,000	Plant under construction.
Escambia Bay Chemical	Pensacola, Fla.	Ammonia, nitric acid, ammonium nitrate	23,000,000	Plant under construction; scheduled for completion by June '56. Capacity: 250 tons/day ammonia; 220 tons/day nitric acid; 330 tons/day ammonium nitrate.
Farmers Chemical Resources Development	Carlsbad, N. M.	Potash	13,000,000	Facility on stream.
Grace, W. R. (Davison Chemical)	Wokarusa, Ind.	Fertilizers		Plant on stream March '56.
Grange League Federation	Big Flats, N. Y.	Fertilizers	800,000	Plant capacity 300,000 tons/yr.
Green Belt Chemical	Northern Ohio	Fertilizers		
Ketona Chemicals	Tarrant, Ala.	Nitrogen solutions, ammonia		New plant. Capacity 45,000 tons/yr. Ready April '56.
Mississippi River Chemical	Pascogondola, Miss.	Fertilizer	5,000,000	15,000 ton/yr. high analysis fertilizer plant planned.
Mississippi River Chemical	Selma, Mo.	Nitric acid	1,400,000	Plant on stream. Designed by Chemical & Industrial Corp. Uses two compressors instead of usual one for more output flexibility. 220 tons 100% acid/day.
Mississippi River Chemical	Selma, Mo.	Ammonia	16,000,000	Plant near completion. 200 ton/day capacity. On same site: a 200 ft. ammonium nitrate prilling tower designed by Fluor.
Missouri Farmer's Assn.	Joplin, Mo.	Fertilizers, diammonium phosphate	5,000,000	10 high capacity mixing plants; construction underway. Capacity; 200 ton/day. First to use new Dorr-Oliver process that starts with wet process phosphoric acid. Production of DAP underway.
Monsanto Chemical	Springfield, Mass.	Nitric acid		60 ton/yr. plant scheduled for completion in '56. Engineered by Fluor.
National Distillers Products (U. S. Ind. Chemicals)	Tuscola, Ill.	Ammonia	7,000,000	Expansion of facilities; To 60,000 tons/yr. Due mid-'56.
National Farmers Union Resources	Arkansas	Fertilizers, agricultural chemicals	Multi-million	Plant planned.
National Farmers Union Resources	Salt Lake City, Utah	Fertilizer		Granular mixed fertilizer plant planned.
National Farmers Union Resources	Rich County, Utah	Concentrated superphosphate & sulfuric acid	5,000,000	Plant planned.
National Farmers Union Resources	Sunpete County, Utah	Anhydrous ammonia	12,000,000	Plant planned. Capacity: 125 tons/day.

SOLVAY

Elberta Brand

Aluminum Chloride

DESCRIPTION

SOLVAY Anhydrous Aluminum Chloride (Elberta Brand) is produced as a high quality crystalline solid and is shipped in a variety of granulations, from extra fine to coarse screened. Formula: $AlCl_3$. Molecular Wt.: 133.3.

PROPERTIES

Specific Gravity 25°/4°C	2.44
Melting Point (Sealed Tube)	190°C.
Boiling Point, 752 mm	182.7°C.
Sublimation Point	180°C.
Odor, in dry air	None
Solubility	
Water	Complete
Alcohol	Complete
Ether	Complete
Carbon Tetrachloride	Soluble
Chloroform	Soluble
Benzene	Insoluble

Aluminum chloride fumes in moist air and reacts readily with water to form aluminum oxychlorides and hydrochloric acid. It is a powerful dessicant.

TYPICAL USES

Ethyl Chloride: Aluminum chloride is a catalyst in the synthesis of ethyl chloride from ethylene.

Styrene: Aluminum chloride is used as an alkylation catalyst for the production of ethylbenzene, an intermediate for styrene.

Synthetic Detergent Alkylates: Aluminum Chloride is used as an alkylation catalyst for production of long chain olefin alkylates used in synthetic detergents.

Butyl Rubber: Aluminum chloride is the catalyst used in the production of butyl rubber.

High Octane Aviation Gasoline: Aluminum chloride is used as an alkylation catalyst in the production of isopropylbenzene, a compound of aviation gasoline. It is also used in the isomerization of paraffinic hydrocarbons for use in high octane gasolines.

Dyestuffs: Aluminum chloride is used to promote condensation and ring reactions which are of great importance in the manufacture of dyestuffs and intermediates such as anthraquinone and acetophenone.

Miscellaneous: Aluminum chloride finds wide use in production of insecticides, pharmaceuticals, phenol, synthetic resins, petroleum cracking, Friedel-Crafts reactions and as an industrial drying agent.

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Methylene Chloride • Monochlorobenzene • Ammonium Bicarbonate
Carbon Tetrachloride • Methyl Chloride • Cleaning Compounds • Caustic Soda
Para-dichlorobenzene • Ortho-dichlorobenzene • Hydrogen Peroxide • Chloroform

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FERTILIZERS & FERTILIZER CHEMICALS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
National Potash	Carlsbad, N. M.	Potash	19,000,000	New plant, capacity 250,000 tons/yr. Due in late '56.
Northeast Texas Chemical	Eastern Texas	Fertilizers	.....	Planned. Engineered by Tears.
Northern Chemical Industries	Searsport, Me.	Ammonia	9,000,000	Plant on stream early '56. Capacity 43,000 tons/yr.
Northern Chemical Industries	Searsport, Me.	Nitrogen solutions	.....	Capacity 45,000 tons/yr. by early '56.
Northern Chemical Industries	Searsport, Me.	Nitric acid	.....	Capacity 21,000 tons/yr. Ready early '56.
Pelron Corp.	Lyons, Ill.	Phosphating compounds, paint strippers	.....	Plant on stream Sept. '55.
Pennsalt	Paulsboro, N. J.	Fertilizers	.....	New plant underway. Completed June '56. To turn out granular type fertilizer.
Petroleum Chemicals	Lake Charles, La.	Anhydrous ammonia	12,000,000	Plant under construction. 100,000 ton/yr. Most output will be sold for fertilizer. Completion set for Fall '57. Design is by Foster Wheeler.
Phillips Pacific Chemical	Pasco, Wash.	Ammonia	20,000,000	Construction underway on 200 ton/day plant. Ready by Nov. '56. Engineered by Fish Chemical.
St. Paul Ammonia Products	Pine Bend, Minn.	Ammonia	15,000,000	Plant construction underway. Will receive its natural gas from southern fields via northern natural gas pipeline. 200 ton/day capacity. Ready April '56. Texaco license. Lummus engineered.
Shell Chemical	Ventura, Calif.	Urea	.....	Plant construction underway. Completion scheduled for Sept. '56. Capacity 100 tons/-day min. Process licensed from Montecatini; differs from others in its type of recycle. It is the first urea plant in Far West. 100 tons/day. Sept. '56. Engineered by Kellogg.
Sohio	Lima, Ohio	Urea	.....	Units due in operation by Jan. '56.
Sohio	Lima, Ohio	Nitric acid	.....	Plant on stream late '55.
Sohio	Lima, Ohio	Anhydrous ammonia	.....	Plant completed July '55.
Southern Nitrogen	Savannah, Ga.	Ammonia, nitric acid, nitrogen solutions, urea, ammonium nitrate	14,000,000	New integrated plant. 250 tons/day of ammonia for conversion into nitrogen solutions and prilled ammonium nitrate. Construction underway Fall '55. Ready by Jan. '57. It is the first synthetic nitrogen plant in the So. Atlantic States area.
Southwest Agrochemical	Phoenix, Ariz.	Ammonia, nitrogen products	2,500,000	Plant planned. Capacity 100 tons/day.
Spencer Chemical	Chicago, Ill.	Formaldehyde	.....	25% expansion planned to 53 million lbs./yr. On stream Jan. '57.
Spencer Chemical	Vicksburg, Miss.	Ammonium nitrate & ammoniating solutions	.....	Expansion ready spring '56.
Spencer Chemical	Vicksburg, Miss.	Nitric acid	1,500,000	Expansion. Scheduled for completion mid-'56.
Standard Oil (Calif.)	Richmond, Calif.	Anhydrous ammonia, nitric acid	12,800,000	Plant construction underway by M. W. Kellogg. 300 ton/day ammonia; 225 tons/day nitric acid. To use Kellogg's steam-methane reforming process; natural gas and refinery gas are starting materials. Ready mid-'56.
Standard Oil (Calif.)	Richmond, Calif.	Fertilizer	.....	Plant construction underway Oct. '55. Built by Chemical & Industrial Corp. C & I has exclusive U. S.—Canadian rights to Potasse & Engrais Chimiques' complex fertilizer process. First such U. S. plant to be built.
Standard Oil (Ohio)	Lima, Ohio	Nitric acid, nitrogen solutions	.....	Plant being constructed by Chemical & Industrial Corp., Cincinnati. Will use Swiss Inventa process for the first time in U. S. 120 tons/day. Due January '56.
Stauffer Chemical	Richmond, Calif.	Vapam	.....	New plant onstream Nov. '55.
Stauffer Chemical	Vernon, Calif.	Mixed fertilizers, pelleted superphosphate	900,000	Plant on stream Jan. '56.
Sun Oil	Marcus Hook	Anhydrous ammonia	10,000,000	Refinery on stream Spring '56. 300 tons/day. Operates on by-product hydrogen from petroleum operations.
Super-Crop Plant Foods	Ottumwa, Iowa	Fertilizers	.....	Continuous granulation plant—10 tons/hour—planned Fall '55. To turn out mixed granular and ammoniated fertilizers.
Swift & Co.	Pampano Beach, Fla.	Fertilizers	.....	Two new plants. First due in Sept. '56.
Swift & Co.	St. Joseph, Mo.	Fertilizers	.....	In operation by Dec. '56.
Texas Company	Lockport, Ill.	Anhydrous ammonia	12,000,000	Plant under construction. 180 tons/day. On-stream late '57.
Thunderbird Chemicals	Kyrene, Ariz.	Ammonia, urea, sulfuric acid	10–13,000,000	Plant construction underway: 120 tons/day ammonia, 45 tons/day urea, 170 tons/day sulfuric. Ready by Fall '56. Ebasco engineered.
Umbaugh Chemicals	Vets, Colo.	Phosphoric acid, ammonium sulfate & anhydrous ammonia	4,400,000	Construction underway: 120 tons/day ammonia, 120 tons/day phosphoric acid, 150 tons/day ammonium sulfate & phosphate.

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
U. S. Potash	Carlsbad, N. M	Potash	3,000,000	Increased the output of its mine and expanded its refining facilities by 20% in '55. Production increased 30% in '56.
U. S. Steel (Columbia Geneva Steel Div.)	Provo, Utah (Geneva Works)	Anhydrous ammonia, nitric acid, ammonium nitrate	18,500,000	Plant construction underway. First major steel plant to use raw coke oven gas as source of hydrogen for ammonia synthesis. 200 tons/day capacity. Blaw-Knox built and designed it. Process developed by Montecatini Fauser. Ready mid-'56. Chemical & Industrial Corp. built the nitric acid plant.
Victor Chemical	Nashville, Tenn	Sodium hypophosphite		New Plant. Completed Feb. '56.
Virginia-Carolina Chemical	Orrville, Ohio, Remington, Ind., & Estherville, Iowa, (Rochester, N. Y.)	Fertilizers		Three new plants in operation late '56. Rochester—early '56.
Western Phosphates	Garfield, Utah	Ammoniated phosphate, triple superphosphate, phosphoric acid, dicalcium phosphate	2,250,000	Expansion to triple output of ammoniated phosphate and triple superphosphate. Production of other items also increased. Ready Fall '56.
Westvaco (Mineral Products)	Newark, Calif	Phosphates		Doubling production capacity for sodium and potassium phosphates.

• Fine Organics

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Abbott Labs	N. Chicago, Ill	Pharmaceuticals	3,000,000	10% increase in capacity. On stream Jan. '56.
Ansul Chemical	Marinette, Wis	Niacin	200,000	Expansion completed Nov. '55. Production by Jan. '56.
Charmin Paper Mills	Green Bay, Wis	Yeast	3,200,000	Plant on stream Nov. '55. To get yeast from wood sugars cooked out during sulfite pulping process.
Crown Zellerbach	Camas, Wash	Dimethyl sulfide, methyl mercaptan		2 million lbs./yr. On stream Jan. '56.
Grain Processing	Muscatine, Iowa	Organic chemicals		Plant on stream. A new pure culture fermentation.
Koppers Co	Arroyo, W. Va	Nicotinic acid		New plant under construction. Start up by early '57. 500,000 lb./yr.
Maumee Chemical	Toledo, Ohio	Organic intermediates	50,000,000	Capacity 300,000 lbs./yr. by May '56.
National Pectin	Chicago, Ill	Pectin		Extensive expansion underway Spring '56.
Perry Bros	Woodside, N. Y	Perfume bases, aromatics, floor materials		Expansion completed.
Schering Corp	Union, N. J	Pharmaceuticals	1,000,000	New unit. Construction underway. On stream early '56.
Sherwin-Williams	Chicago, Ill	Phthalocyanine pigments	1,000,000	New plant planned as of Jan. '56.
Stepan Chemicals	Joliet, Ill	Dimethyl sulfoxide	1,000,000	10 million lb./yr. plant on stream early '56.
Upjohn	Memphis, Tenn	Pharmaceuticals	1,000,000	Expansion planned July '55.
Warner-Lambert	Lititz, Pa	Cosmetics	3,500,000	Plant in operation June '56.

• Heavy Organics

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Aetna Oil	Louisville, Ky	Petrochemicals	Multi-million	Converting crude oil facility to manufacture petrochemicals.
Air Reduction Chemical	Calvert City, Ky	Vinyl acetate monomers	3,000,000	On stream April 56. The 30 million lb./yr. unit uses a process developed by Wacker-Chemie and Fabwerke Hoechst in Germany.
Air Reduction (Colton Co.)	Cleveland, Ohio	Urea formaldehyde	500,000	Plant under construction. 5 million lbs./yr.
Allied Chemical & Dye (General Chemical)	Danville, Ill	Genetrons fluorinated hydrocarbons		Plant on stream Dec. '55.
Allied Chemical & Dye (National Aniline)	Hopewell, Va	Refined cyclohexanol		Several million lbs. capacity due on stream Oct. '56.
Allied Chemical & Dye (National Aniline)	Moundsville, W. Va	Aniline oil		Plant on stream May '56. Duplicates existing plant.
Allied Chemical & Dye (National Aniline)	Moundsville, W. Va	Isocyanates	Multi-million	Plant on stream mid-'56. 6-8 million lb./yr. capacity.
American Aniline & Extract	Calvert City, Ky	Polyvinyl alcohol		Plant planned Aug. '55.
American Cyanamid	Avondale, La	Acrylonitrile	25,000,000	Second unit will bring plant capacity to 100 million lb./yr. Unit will keep Cyanamid the largest producer in U. S. Due on stream 1958.
American Cyanamid	Avondale, La	Monomethylstyrene	4,500,000	Unit on stream early '56. 40 million lb./yr. only unit of its kind in the U. S.
American Cyanamid	Bridgeville, Pa	Phthalic anhydride		First units of new plant on stream Aug. '55. Capacity; 50 million lbs./yr.
American Cyanamid	Pryor, Okla	Nitroguanidine	20,000,000	Plant due on stream late '56.

HEAVY ORGANICS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
American Cyanamid	Wallingford, Conn	Melamine	.....	20 million lb./yr. unit on stream June '56.
American Cyanamid	Wallington, Conn	Methyl styrene	.....	Plant on stream early '56.
American Cyanamid	Willow Island, W. Va	Melamine	.....	10 million lb./yr. unit on stream Jan. '56.
American Oil (Pan American Chemicals)	Texas City, Tex	Methyl mercaptan	.....	Plant construction completed. First unit of its kind in the world.
American Potash & Chemical	Vernon, Calif	Parathion	.....	New facilities completed for captive production of technical parathion.
Archer-Daniels-Midland	Mankato, Minn	Processed soybean oil	.....	Expansion of dehulling and milling facilities completed Oct. '55.
Arizona Chemical	Springhill, La	Tall oil	.....	Engineering of plant underway.
Arizona Chemical	Panama City, Fla	Fractionated tall oil pinene	1,390,000	Expansion on stream. Capacity boosted 2½ times.
Barnes, W. M., Co	No. Salt Lake City, Utah	Propane	.....	Deasphalter on stream early Feb. '56.
Borden (Chemical Div.)	Browntown, Wis	Phenol, resorcinol, formaldehyde, liquid & dry catalysts	.....	Plant on stream Sept. '55. 12 million lbs./yr. initial production rate.
Brea Chemical—Koppers	Wilmington, Calif	Ethylene	10,000,000	Unit under construction by Koppers. Due Mid-'57.
Brin Chemical	Tulsa, Okla	Phenol, xylenol, cresylic acids	.....	Plant completed.
Carwin	No. Haven, Conn	Isocyanates	.....	Facilities completed late '55.
Celanese	Belvidere, N. J	Cellulose propionate	1,500,000	Volume production on stream by Nov. '55. Celanese is first producer of this material.
Celanese	Bishop, Tex	Ethylene, glycol diacetate	.....	Volume production Sept. '55. Uses new process.
Celanese	Houston, Tex	Polyolefins	5,000,000	New 40 million lb./yr. unit under construction. To be completed early '57. Will use Phillips process for low-pressure poly.
Celanese	Pampa, Tex	Vinyl acetate	.....	Facilities to double production ready Dec. '55.
Columbia—Southern Chemical	Barberton, Ohio	Trichloroethylene	.....	On stream Fall '56.
Columbia—Southern Chemical	Barberton, Ohio	Carbon tetrachloride	.....	Under construction.
Commercial Solvents	Sterlington, La	Methanol, petrochemical derivatives, nitroparaffins	10,000,000	New plant on stream in August '55 now being expanded. Original capacity NP unit 10 million lb./yr. Basic step of process is vapor-phase nitration of hydrocarbons.
Diamond Alkali	Deer Park, Tex	Perchloroethylene	.....	Doubling facilities. Under construction. Ready Jan. '57. Capacity 55 tpd.
Dow Chemical (Texas Div.)	Freeport, Tex	Ethylene glycol-ethylene oxide	.....	Expansion: 60 million lb./yr. increase on stream Fall '55. Addition of 30 million lb./yr. to earlier expansion. On stream late '56.
Dow Chemical	Freeport, Tex	Synthetic glycerine	.....	Full scale operation summer '55. 36 million lbs./yr. It is the second synthetic glycerine plant in U. S.
Dow Chemical	Velasco, Tex	Synthetic glycerine	.....	To increase capacity of 36 million lb./yr. plant which started up summer '55. Uses Dow's own process (similar to Shell Chemical's).
Du Pont	Antioch, Calif	Tetraethyl-lead-Freon	Multi-million	Plant scheduled for completion in '56. Operations by early '57.
Du Pont	Antioch, Calif	Sodium, ethylchloride, trichloroethylene, perchloroethylene	Multi-million	Plant adjoins new tetraethyl-lead-Freon refrigerants plant. To be completed by early '57.
Du Pont	Belle, W. Va	Adipic acid	Multi-million	Expansion program will boost production by 75%. New unit will use a nitric acid oxidation process not the batch air oxidation method now used at Belle.
Du Pont	Deepwater, N. J	Tolyl diisocyanate	10,000,000	Plant in operation Feb. '56. 25 million lb./yr.
Du Pont	Niagara Falls, N. Y	Polyvinyl alcohol	.....	Expansion on stream early '56.
Du Pont	Orange, Tex	Adipic acid	.....	Expansion completed late '55.
Du Pont	Tucker, Ga	Paints, enamels, thinners	.....	Plant construction underway Fall '55. On stream summer '56.
Esso Standard Oil	Baton Rouge, La	Ethylene	12,000,000	New recovery unit under construction.
Esso Standard Oil	Linden, N. J	Ethylene	.....	Construction to begin late '56 for first commercial ethylene recovery plant on East Coast.

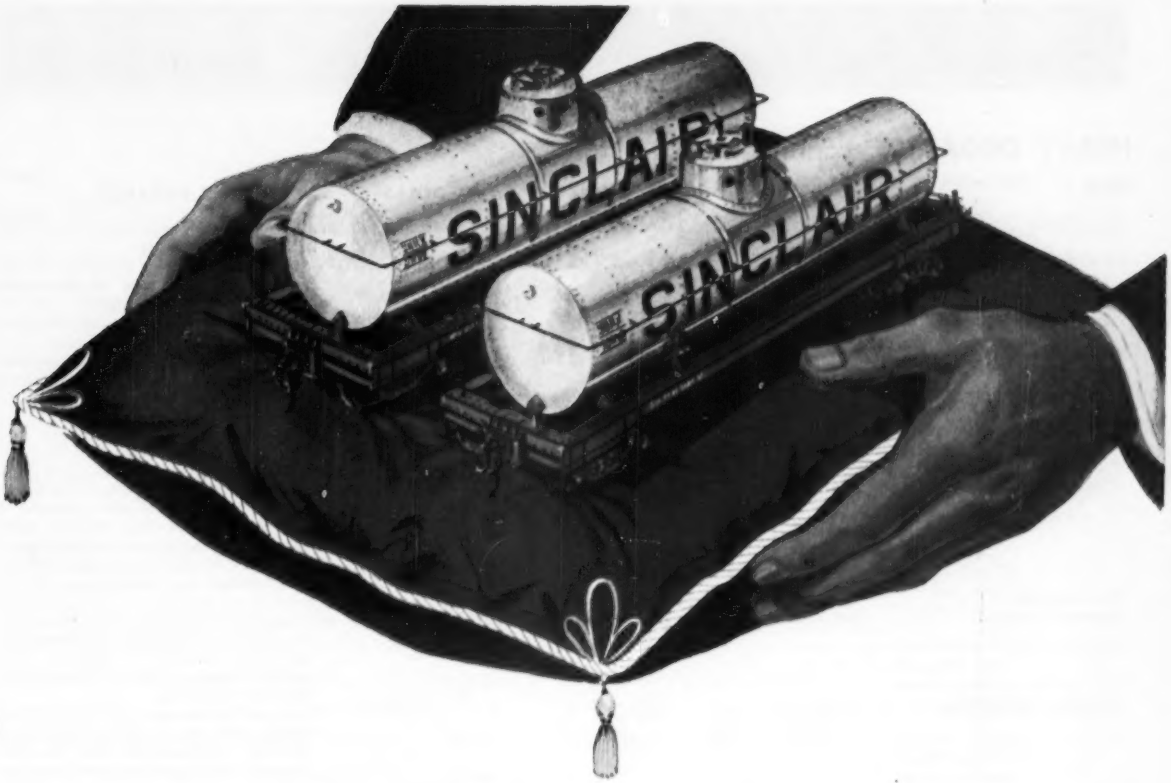
About New Plants & Facilities . . .

This fifth annual inventory lists 803 major new chemical processing plants or facilities announced, planned, under construction or completed in the U. S. from July 1955 through June 1956. It does not include minor projects; it does not include projects costing less than $200,000. Listings, compiled from many sources, have been checked by major companies or by CE's field editors for accuracy, completeness and current status. For information on previous plant inventories, see p. 19.

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Ethyl	Baton Rouge, La.	Vinyl chloride monomer	Multi-million	Plant to be constructed. Due complete late '57.
Ethyl	Baton Rouge, La.	Ethyl chloride	4,000,000	Plant to be constructed.
Ethyl	Joliet, Ill.	Tetra-ethyl lead	.....	Options on land for possible new facilities.
Food Machinery & Chemical	Nitro, W. Va.	Diallyl phthalate prepolymer	.....	Plant on stream early '56.
G & A Laboratories	Savannah, Ga.	Rosin	.....	Pelletized stabilized rosin plant planned. Capacity: 2,500 lb./hr. Uses new Batelle Institute process.
General Aniline & Film (Antara Chem.)	Calvert City, Ky.	Acetylene chemicals	.....	On stream Dec. '55. Capacity 30-40 million lbs./yr. acetylene chemicals by high pressure synthesis.
General Aniline & Film (Antara Chem.)	Calvert City, Ky.	Synthetic detergents	1,000,000	Plant planned next to acetylene chemical operations. On stream July '56.
General Aniline & Film (Antara Chem.)	Linden, N. J.	Liquid detergents	.....	Construction to begin soon.
General Aniline & Film	Linden, N. J.	Ethylene oxide	8,000,000	A 60 million lb./yr. plant to use scientific design's direct oxidation process. Production eventually will succeed 750 million lb./yr. Existing chlor-hydrin facilities yield 550 million lbs./yr. Due on stream in '57.
General Paint	Portland, Ore.	Paint	200,000	Plant on stream Spring '56.
Glidden Co.	Jacksonville, Fla.	Terpene chemicals	500,000	Increase in capacity by 25%.
Glidden Co. (So. Chem. Div.)	Port St. Joe, Fla.	Tall oil, fatty acids, rosins, pitch	2,750,000	New plant under construction. To use crude by-product soap skimmings from Du Pont-controlled paper mill, as raw materials. To handle 50,000 tons/yr. of by-product soap skimmings. Due on stream April '57.
Goodrich, B. F.	Calvert City, Ky.	Acrylonitrile	8,500,000	Plant on stream Fall '55. Semiworks.
Goodyear Tire & Chemical	Niagara Falls, N. Y.	Chemicals	500,000	Expansion underway Oct. '55.
Gulf Oil	Port Arthur, Tex.	Ethylene	.....	Largest unit of its kind on stream. Handles 220 million lb./yr. More than doubles firm's turnout. Ups U. S. capacity by 10%.
Gulf Oil	Port Arthur, Tex.	Ethylene	.....	Considering construction of 3rd unit to the second completed summer '55, at P. A., Texas.
Hercules Powder	Bacchus, Utah	Dynamite	2,000,000	Plant expansion. Completed early '56. Will become firm's center for explosives, replacing Hercules' California plant.
Hercules Powder	Burlington, N. J.	Dimethyl terephthalate	4,000,000	New plant on stream. Uses new air oxidation technique. Capacity: 1 million lbs./mo. of DMT., developed by Calif. Research. Corp.
Hercules Powder	Franklin, Va.	Processing tall oil	.....	35,000 ton/yr. unit ready July '56.
Hercules Powder	Gibbstown, N. J.	Para-cresol	.....	Expansion of unit. Construction underway. Completion date late '56. Starting material p-cymene. Capacity: 3 million lb./yr.
Hercules Powder	Louisiana, Mo.	Methanol	2,000,000	A 7 million lb./yr. plant planned Spring '56. Due Mid-'57.
Hercules Powder	Louisiana, Mo.	Pentaerythritol and formaldehyde	6,000,000	Plant scheduled on stream by late '56. Pentaerythritol capacity 25 mil. lb./yr.; 100 million lb./yr. of formaldehyde. On site of Hercules' anhydrous ammonia plant.
Hercules Powder	Savannah, Ga.	Rosin, tall oil	4,500,000	Expansion underway. Completed late '56. 35,000 tons/yr.
Heyden Chemical & Monsanto Chemical	Texas City, Tex.	Methanol	.....	Plant on stream late Fall '55.
Heyden Chemical	Fords, N. J.	Pentaerythritol	.....	A 25 million lb./yr. plant under construction. On stream March '57.
Hidalgo Chemical	Brownsville, Tex.	Alcohol, organic acids, aldehydes, liquid fuels	95,000,000	Plant completed June '53. Startup delayed due to functional difficulties. Uses modified Fischer-Tropsch process.
Kentucky Hydrocarbon	Maytown, Ky.	Ethane	.....	A 50 Mmcf. plant now being designed (April '56). Scheduled for operation early in '57.
Koal-Krudes Inc.	Red Lodge, Mont.	Coalchar, creosote	200,000	Plant planned; 250 tons coal consumed daily; creosote from low-grade coal.
Koppers	Arroyo, W. Va.	Aromatics	.....	Construction under consideration for first U. S. plant to catalytically pressure-refined coke oven aromatics. To use Scholven Chemie process. Startup by late '56.
Koppers	Petrolia, Pa.	Resorcinol	.....	To increase current capacity by 40%. On stream early Fall '56.
Monsanto Chemical	Everett, Mass.	Phthalic anhydride	.....	Plant expansion will provide 60% increase in output. Completion set for early '57.
Monsanto Chemical	Luling, La.	Adipic acid	Multi-million	Plant due on stream early '57. To use raw materials produced at same location by Lion Oil Co.
Monsanto Chemical	Texas City, Tex.	Ethylene	.....	Construction of new unit to be completed by early '57. 15% production capacity increase.
Monsanto Chemical	Texas City, Tex.	Tertiary-butylamine	.....	On stream Jan. '56.
National Distillers Products (U. S. Industrial Chemicals)	Tuscola, Ill.	Isosebacic acid	2,050,000	Plans new plant; 10 million lbs./yr. Completion early '57.
National Distillers Products	Tuscola, Ill. & Newark, N. J.	Denatured alcohol	.....	Two new denaturing plants completed. Capacity—Newark 10 million gal./yr.; Tuscola 12 million gal./yr. On stream Nov. '55.

HEAVY ORGANICS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Ninol Labs	Chicago, Ill.	Detergents, emulsifiers	250,000	Capacity: 10 million bbls./yr.
Olin Mathieson Chemical	Brandenburg, Ky.	Ethanolamine		New plant in operation Dec. '55.
Olin Mathieson Chemical	Pittsburgh, Pa.	Automotive anti-freeze, and related products.		Plant completed Sept. '55.
Olin Mathieson Chemical	St. Louis, Mo.	Lead, styphnate and tetracene	2,000,000	Under consideration; contract with U. S. Gov't.
Oronite Chemical	Richmond, Calif.	Isophthalic acid		50 million lb./yr. on stream mid '56.
Pennsalt	Calvert City, Ky.	Fluorinated hydrocarbons	Multi-million	Plant due on stream late in '56. Initial production to serve refrigerant and aerosol-propellant markets.
Petroleum Products Refining & Producing	Lodge Grass, Mont.	Asphalt		3,000 bpd. plant under construction scheduled. On stream June '56.
Petrox-Tex Chemical	Houston, Tex.	Butadiene		Production to 135,000 tons/yr. by late '56.
Phillips Chemical	Sweeney, Tex.	Ethylene	12,350,000	290 million ton/yr. plant under construction. Due in operation April '57.
Pittsburgh Coke & Chemical	Neville Island, Pa.	Phthalic anhydride	3,000,000	Construction begun Fall '55. To operate by Fall '56. New unit will double capacity of the firm's coal chemicals division.
Pittsburgh Consolidation Coal	Cresap, W. Va.	Coal Carbonization		Char plant planned. To be nation's first commercial fluidized-bed, low temperature coal carbonization plant. Annual capacity: 1.5 million tons of char; 60 million gal. of tar.
Plains Oil Mills	Sidney, Neb.	Processed oils		Plant construction underway. Raw material safflower seed.
Reichhold Chemicals		Pentaerythritol		Expansion planned; on stream by late '56. 5 million lb./yr. capacity.
Reichhold Chemicals	Azusa, Calif.	Phthalic anhydride		10 million lbs./yr. On stream July '56.
Reichhold Chemicals	Detroit, Mich.	Phthalic anhydride		Capacity 8 million lbs./yr. On stream April '56
Reichhold Chemicals	Elizabeth, N. J.	Maleic anhydride		2 million lbs./yr. Due Jan. '56.
Reichhold Chemicals	Tacoma, Wash.	Dry adhesives	25,000,000	Site purchased March '56.
Reichhold Chemicals	Tacoma, Wash.	Pentachlorophenol		On stream June '56. It's Reichhold's second plant for pentachlorophenol. The other is in Seattle, Wash.
Rohm & Haas	Deer Park, Tex.	Acetylene		Plant being built by Chemical Construction. Will use BASF process. Starting material: methane. By-product gases from acetylene plant will be used to make ammonia and methanol for its own consumption.
Rohm & Haas	Houston, Tex.	Methanol		100 ton/day plant due on stream early '57. Engineered by Foster Wheeler. Texaco licensed operation.
Shell Chemical	Martinez, Calif.	Ethyl amyl ketone		On stream Aug. '56.
Shell Chemical	Norco, La.	Methyl ethyl ketone		40 million lb./yr. plant. Construction underway Jan. '56. Completed by early '57.
Shell Chemical	Norco, La.	Acrolein, glycerine		New units planned, Jan. '56.
Shell Chemical	Norco, La.	Allyl chloride & chlorohydrin		Unit under construction Jan. '56.
Sherwin-Williams	Chicago, Ill.	Para-cresol	1,100,000	Doubling capacity to over 4 million lbs./yr. On stream June '56.
Sherwin-Williams	Coffeyville, Kans.	Barium carbonate		7,500 ton/yr. plant on stream. Turnout to go to oil additive manufacturers and into barium citrate. Raw material: baryte.
Sinclair Refining	Houston, Tex.	Lube additives	2,200,000	Completed in '56.
Skelly Oil	Eunice, N. M.	Isobutane	250,000	Plant planned as of late '55.
Standard Oil (Calif.)	Perth Amboy, N. J.	Ethylene		Refinery under consideration Oct. '55. Production via the Wulff process—never before commercialized.
Standard Oil (N. J.)	Linden, N. J.	Ethylene		Refinery under consideration Oct. '55. Considerable production capacity: To include 20,000 bpd. powerforming unit.
Standard Ore & Alloy	Natchez, Miss.	Acetylene	20,000,000	Capacity: 30,000 tons/yr. acetylene; 60,000 tons/yr. ammonia & vinyl derivatives.
Stauffer Chemical	Louisville, Ky.	Petrochemicals: carbon tetrachloride, chloroform, methylene chloride & anhydrous hydrogen chloride	Multi-million	New plant under construction; in operation by Spring '57.
Stauffer Chemical	Le Moyne, Ala.	Carbon bisulfide	Multi-million	New plant ready for startup Aug. '56.
Stauffer Chemical	Perry, Ohio	Carbon bisulfide		Plant expansion started up May '56.
Stepan Chemical	Joliet, Ill.	Ethanolamines		Planned.
Stepan Chemical	Joliet, Ill.	Ethylene oxide derivatives		A 7 million lb./yr. plant under construction.
Texas Eastman	Longview, Tex.	N-butyraldehyde, Isobutyraldehydi (aldehydes)		Expansion planned. Completed by Fall '56.
Texas Eastman	Longview, Tex.	Octyl alcohol		Expansion of oxo plant completed late Fall '55. On stream early Oct. '55.
Trojan Powder		Pentaerythritol		Plant completed by Dec. 55. 9-10 million lb./yr. Will boost firm's total capacity to 25 million lbs./yr.
Truland Chemical	East Rutherford, N. J.	Organic by-products and residues		Tripled expansion facilities on stream Summer '56. Believed to have the world's first all-electronic plant-control system.
Union Bag & Paper	Savannah, Ga.	Tall oil		Capacity: 15,000 tons/yr.



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HEAVY ORGANICS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Union Carbide	.....	Coal chemicals	50-100,000,000	Coal hydrogenation unit under construction Oct. '55. 1,000 tons/day.
Union Carbide (Carbide & Carbon)	Seadrift, Tex	Ethylene oxide, glycols	.....	New facilities for an extra 65 million lbs./yr. glycol which brings total ethylene oxide capacity to about 200 million tons/yr. Completed by Fall '56. Uses its own direct oxidation process.
Union Carbide (Carbide & Carbon)	So. Charleston, W. Va.	Peracetic acid, Sorbic acid	.....	1 million lb./yr. sorbic acid unit on stream early '56.
Union Carbide (Carbide & Carbon)	Torrance, Calif.	Ethylene oxide, ethylene glycol	.....	On stream mid '56.
Union Chemical & Materials	.....	Carbon tetrachloride	8,000,000	Units installed by March '56.
Warren Petroleum	Conroe, Tex.	Methanol	500,000	Certificate of necessity granted.
Westvaco (Chlor-Alkali)	Charleston, W. Va.	Isocyanates	.....	New facilities on stream.
Wisconsin Steel Works	South Chicago, Ill.	Coke, coal chemicals	.....	Expansion: 52 by-product coke ovens added. $5.2 million contract to Allied Chemical & Dye, Wilputte Coke Oven Division. 2,000 tons coke; 35 tons ammonium sulfate; 0.5 tons naphthalene; 30 million cu. ft. gas; 28,000 gal. tars; 11,000 gal. light oils per day.
Witco Chemical	Los Angeles, Calif.	Metallic stearates	.....	Plant on stream late '55.
Wyandotte Chemical	Baton Rouge, La.	Ethylene oxide-ethylene glycol	8,000,000	Site purchased for new plant, early '56 and July '56. Probably will use Scientific Design process (direct oxidation of ethylene). Production scheduled for late '57. Construction underway by Fall '56.
Youngstown Sheet & Tube	Indiana Harbor, Ind. (Youngstown, Ohio)	Coke	9,000,000	Plans a new 75 oven coke plant. Battery will convert 1,800 tons of coal to 1,250 tons of coke/day. Completion by Sept. '56. Will bring firm's total capacity to 2 million tons/yr.

• Inorganics

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Acheson Dispersed Pigments	Orange, Tex.	Dispersed pigments	.....	Doubled capacity on stream Aug. '55.
Air Reduction (Air Reduction Sales)	Calvert City, Ky.	Oxygen, nitrogen, argon	4,000,000	Plant on stream Spring '56.
Allied Chemical & Dye (General Chemical)	East St. Louis, Ill.	Sulfuric acid	.....	Expansion under construction. In operation by Summer '56.
Allied Chemical & Dye (General Chemical)	Elizabeth, N. J.	Sulfuric acid	.....	New plant under construction. Scheduled for production Fall '57.
Allied Chemical & Dye (General Chemical)	Hopewell, Va.	Liquid aluminum sulfate	.....	Plant on stream Spring '56. 35% expansion.
Allied Chemical & Dye (General Chemical)	Kennewick, Wash.	Aluminum sulfate	.....	On stream late summer '56. Output goes mainly to AEC's Hanford Works.
Allied Chemical & Dye (General Chemical)	Richmond, Calif.	Sulfuric acid	.....	Expansion. In operation Oct. '55.
Allied Chemical & Dye (General Chemical)	Tacoma, Wash.	Liquid aluminum sulfate	.....	Plant on stream by Fall '55. First of its kind in Puget Sound area.
Allied Chemical & Dye (Solvay)	Brunswick, Ga.	Chlorine, caustic soda	.....	Mercury-cell chlorine caustic plant under construction. On stream by Dec. '56. Initial capacity: 100 tons/day chlorine; 125 tons/day caustic soda. To double capacities by Winter '57.
Allied Chemical & Dye (Solvay)	Moundsville, W. Va.	Solid caustic soda	.....	New facilities under construction. Scheduled for production by Spring '57.
Allied Chemical & Dye (Solvay)	Syracuse, N. Y.	Hydrogen peroxide	.....	Plant on stream Jan. '56. Uses new nonelectrolytic process developed by Solvay.
Allied Chemical & Dye (Solvay)	Syracuse, N. Y.	Ammonium bicarbonate, soda ash	.....	25% plant expansion on stream Jan. '56.
American Colloid	Nashville, Ark.	Barite	500,000	Mining and processing plant planned June '56.
American Cyanamid	Joliet, Ill.	Sulfuric acid	.....	150 ton/day plant. On stream Jan. '56.
American Cyanamid	Plymouth, N. C.	Alum	.....	Construction of new plant started early '56.
American Cyanamid	Savannah, Ga.	Titanium dioxide	15,000,000	Plant on stream Dec. '55. 24,000 tons/yr.
American Potash & Chemical (American Lithium Chemical)	San Antonio, Tex.	Lithium hydroxide	6,000,000	Unit on stream Nov. '55.
American Potash & Chemical	Trona, Calif.	Salt cake	.....	20% increase in production of natural material.
American Smelting & Refining	Tacoma, Wash.	Sulfur dioxide	4,000,000	Plant, under consideration, to derive liquid sulfur dioxide from wastes created in copper smelting process using dimethyl aniline.
American Sulphur & Refining	Sulphurdale, Utah	Cystalline sulfur	1,100,000	Refinery on stream Aug. '55. Capacity 100 tons/day. Using solvent recovery process based on Esso patent.
Ansul Chemical	Marinette, Wis.	Sodium bisulfate	200,000	Expansion ready early '56.
Apache Oil & Helium	Phoenix, Ariz.	Helium	10-12,000,000	Facilities planned for by-product helium along with ammonia unit.

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Bankline Oil	Bakersfield, Calif.	Coke	3.5–4,000,000	Coking plant and catalytic reformer under construction. Capacity; 4,000 bpd. Converts topped crude and thermally cracked fuel oil. On stream late '56.
Bankline Oil	Bakersfield, Calif.	Sulfuric acid	3.5–4,000,000	To convert hydrofluoric acid alkylation unit into 1,500 bpd. sulfuric acid unit.
Barium & Chemicals	Painesville, Ohio	Barium carbonate		Plant on stream Dec. '55.
Carborundum Co.	Falconer, N. Y.	Fused cast refractories	1,500,000	Expansion underway.
Carborundum Co.	Logan, Ohio	Abrasives	Multi-million	New plant site planned. Construction underway.
Chemical Salt Production	Grantsville, Utah	Industrial salt		Venture, jointly owned by Hooker Electrochemical and Pennsalt will provide northern chlorine-caustic operations with unlimited source of industrial salt. Work started March '56.
Climax Molybdenum	Langeloth, Pa.	Molybdic oxide		To double its 2.7 million lb./yr. capacity of its high purity molybdic oxide plant. Outlets are mainly in petroleum reforming and in desulfurization processes.
Columbia-Southern Chemical	Barberton, Ohio	Muriatic acid		Under construction.
Columbia-Southern Chemical	Barberton, Ohio	Chlorine, caustic soda		Expansion. On stream Dec. '56.
Columbia-Southern Chemical	Lake Charles, La.	Chlorine, caustic soda		Plant expansion on stream Fall '56.
Columbia-Southern Chemical	Le Moyne, Ala.	Calcium chloride		Capacity tripled by Dec. '55.
Columbia-Southern Chemical	Natrium, W. Va.	Titanium tetrachloride		Started up April '56.
Columbia-Southern Chemical	Natrium, W. Va.	Hydrogen peroxide		Nonelectrolytic process plant expansion planned Oct. '55. In engineering stage.
Consolidated Chemical Industries	Baytown, Tex.	Sulfuric acid	4,000,000	Sludge-acid regeneration unit on stream Aug. '55. 400 tons/day. Largest single unit of its kind ever built.
Consolidated Chemical Industries	Houston, Tex.	Sulfuric acid	4,000,000	Plant on stream Aug. '55. Plants at Houston & Baytown add 280,000 tons/yr. to total output.
Consolidated Chemical Industries	Le Moyne, Ala.	Sulfuric acid	2,000,000	400 tons/day. Plant on stream Fall '56.
Continental Oil (Lake Charles Chemical	Lake Charles, La.	Coke	6,250,000	New coking unit to be completed late in '57. To produce about 85,000 tons/yr. of coke for industrial use and 4,200 bpd. of refinery stock for motor gasoline.
Continental Sulphur & Phosphate	Sulphurdale, Utah	Sulfur		Plant on stream Aug. '55.
Cornwell Chemical	Cornwells Hts., Pa.	Sulfuric acid		Expansion planned.
Cotarco, Inc.	Walsenburg, Colo.	Char products, sulfur		5,930 tons/day char products; 67 tons/day sulfur. Plant now under construction.
Diamond Alkali	Painesville, Ohio	Chromic acid		Plant on stream Aug. '55.
Dixon Chemical & Research	Newark, N. J.	Sulfuric acid	2,000,000	400–450 ton/day on stream by late '56. Contact process to be used.
Dow Chemical	Baton Rouge, La.	Chlorine, caustic soda	20,000,000	Plant to be built. Site selected June '56. Construction underway Fall '56.
Dow Chemical (Texas Div.)	Freeport, Tex.	Soda ash	3,000,000	Plant on stream Oct. '55. 300 tons/day. Uses cell carbonation to avoid costly evaporation.
Du Pont (Grasselli Chemicals)	Cincinnati, Ohio	Sulfuric acid		Under construction.
Du Pont	Edgemoor, Del. & Baltimore, Md.	Titanium dioxide		Expansion of facilities underway. Will increase firm's output by more than 25%—to about 140,000 tons/yr. Other expansions in 1957.
Flint Kote	Sweetwater, Tex.	Gypsum and other products	20,000,000	Expansion includes new gypsum processing plant. To start up by '57.
Food Machinery & Chemical (Becco)	Buffalo, N. Y.	Hydrogen peroxide	2,000,000	Expansion on stream. Uses nonelectrolytic process.
Food Machinery & Chemical (Becco)	Portland, Ore.	Hydrogen peroxide	1,000,000	Expansion to increase output by 50%.
Food Machinery & Chemical (Becco)	Vancouver, Wash.	Hydrogen peroxide	1,000,000	Expansion; on stream early '56. Using electrolytic process. Production boosted 50%.

About Previous Plant Inventories . . .

For projects not included in this July 1954-June 1955 period, refer to tabulations on new plants and facilities first compiled by CE and published annually since 1951 in these issues: February 1951, 1952, 1953; January 1954; Inventory 1954, 1955. These surveys have listed nearly 4,000 new construction projects in the U. S. chemical process industries—the most comprehensive tabulation of its kind generally available. Next year's Inventory will list projects for the coming 12 months. For information on the coverage of this plant inventory see p. 14.

INORGANICS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Food Machinery & Chemical (Westvaco Chlor-Alkali)	Green River, Wyo	Soda ash		300-350,000 tons/yr. On stream Jan. '56.
Frontier Chemical	Denver City, Tex	Chlorine, caustic soda	4,000,000	Expansion planned.
Garfield Chemical & Mfg	Garfield, Utah	Sulfuric acid	2,500,000	New plant—construction underway. 250 tons/day capacity, bringing total output to 1,000 tons/day.
General Aniline & Film (Antara Chem.)	Linden, N. J	Chlor-alkali	5,000,000	Plant built by Blaw-Knox. Uses mercury cell electrolytic process. 50 tons/day, on stream early '56.
General Refractories	Lehi, Utah	Fire brick		New plant in operation.
Glidden Co	Sparrows Pt., Md	Titanium dioxide	8,000,000	New unit on stream July '56. Capacity: 18,000 tons/yr. Along with two more units to be completed by 1960, it will swell total capacity to double its present level.
Grace, W. R. (Davison Chem.)	Curtis Bay, Md	Cracking catalysts	4,000,000	Plant capacity: 60 million lbs./yr. On stream April '56.
Grace, W. R. (Davison Chem.)	Curtis Bay, Md	Monazite derivatives	2,000,000	Capacity: 10,000 tons/yr. On stream July '56.
Grace, W. R. (Davison Chem.)	Lansing, Mich	Hydrofluoric acid		Completed new facilities—Jan. '56—for water fluoridation. Firm's total capacity is now 14,000 tons/yr.
Great Lakes Oil & Chemical	Filer City, Mich	Bromine	350,000	Construction of additional facilities underway.
Hagan Corp	Rockwood, Mich	Water conditioning products	1,000,000	Plant completion by Fall '56.
Harbison-Walker	Leslie, Md	Silica		Refractories plant under construction.
Hooker Electrochemical	Montague, Mich	Hydrogen chloride	3,000,000	Expansion plant includes; hydrogen chloride compression unit and chlorine liquefaction system. Completed mid-'56.
Inland Steel	Indiana Harbor, Ind	Coke	Multi-million	Expansion; capacity increased by 455,000 tons/yr. On stream July '56.
International Minerals & Chem	Carlsbad, N. Mex	Potassium sulfate		To increase capacity from 40,000 to 150,000 tons/yr.
International Minerals & Chem	Greenville, Tenn	Mica	400,000	New plant. Construction underway Dec. '55. Capacity: 100 ton/day.
Kaiser Gypsum	Antioch, Calif	Gypsum plaster	5,000,000	Plant construction underway. (2nd plant planned.) Total production capacity: 274 million sq. ft./yr. of gypsum board products and 20,000 tons of plaster.
Lithium Corp. of America	Minneapolis, Minn. (St. Louis Park, Minn.)	Lithium metal & lithium hydride		Expansion planned.
Mallinckrodt Chemical	St. Louis, Mo	Tantalum pentoxides		Capacity: 1 million lbs./yr.
Michigan Chemical & Murphy Corp.	El Dorado, Ark	Bromine	1,200,000	Plant to be completed by Fall '56.
Monsanto Chemical	Monsanto, Tenn	Inorganic chemicals		On stream mid '56.
Monsanto Chemical	Trenton, N. J	Sheeting for safety glass	Multi-million	To construct facilities to convert Shawinigan's Butvar (polyvinyl resin base material). On stream by late '56.
Montana Sulphur & Chemical	Billings, Mont	Sulfur		New plant. Completed early '56. Raw material: H_2S gas.
National Distillers Products (U. S. Ind. Chemicals)	Tuscola, Ill	Phosphoric acid		A 60,000 ton/yr., 75% phosphoric acid unit under construction. To use process developed by S. A. Metallurgique de Prayon, Belgium. Start-up date late '56.
National Distillers Products (U. S. Ind. Chemicals)	Tuscola, Ill	Hydrogen		New reforming unit on stream to produce H_2 from natural gas at the Tuscola ammonia plant.
National Distillers Products (U. S. Ind. Chemicals)	Tuscola, Ill	Sulfuric acid	2,000,000	Capacity: 140,000 tons/yr.
National Gypsum	Anniston, Ala	Wallboard cover paper	Multi-million	New plant planned. 150 tons/day capacity.
National Gypsum	Burlington Co., N. J	Gypsum wallboard & plaster	1,000,000	New plant planned Aug. '55.
National Gypsum	Westwego, La	Gypsum	6,000,000	Plant in operation.
National Lead (Titanium Pigments)	St. Louis, Mo	Titanium dioxide	20,000,000	New 36,000 ton/yr. unit on stream (Spring '56).
Northern Chemical Industries	Searsport, Me	Sulfuric acid	600,000	New plant construction underway. Capacity; 45,000 tons/yr.
Oldbury Electro-Chemical	Columbus, Miss	Sodium Chlorate	1,000,000	Capacity 3,000 tons/yr. In operation.
Olin Mathieson	Brunswick, Ga	Chlorine, caustic		Engineering studies on plant underway. Facilities due early '57.
Olin Mathieson	McIntosh, Ala	Chlorine, caustic	7,800,000	Plant expansion to double capacity to 250 tons/day chlorine; 280 tons/day caustic. Due Jan. '57.
Owens-Illinois	Portland, Ore	Glass containers		New plant opened mid-July '55. Completion set for Fall '56.
Pabco Products	Florence, Colo	Gypsum wallboard	2,500,000	New plant. On stream April '56.
Pabco Products	Newark, Calif	Gypsum wallboard, lath & sheathing		New plant. Construction underway.
Pacific Coast Borax	Boron, Calif	Borax and boron compounds	18,000,000	New refinery and expansion at mine and plant underway. Completion by early '57. Production capacity to exceed that of firm's existing refinery in Wilmington, Calif.

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Pennsalt	Calvert City, Ky	Potassium hydroxide	Multi-million	New electrolytic unit equipped with De Nora mercury cells. Sizeable construction underway. On stream early '56.
Pennsalt	Mexico, Ky	Fluorspar		Acid grade fluorspar unit ready in '56.
Phillips Chemical	Andrews City, Tex	Sulfur		Unit to turn out 60 long tons/day. Adjacent to natural gasoline plant.
Pittsburgh Plate Glass	Decatur, Ill	Window glass	Multi-million	New plant. Uses newly developed mechanical and electrical equipment.
Pittsburgh Plate Glass	Cumberland, Md	Plate glass	34,000,000	New plant. Construction underway. Due in Oct. '56.
Pittsburgh Plate Glass	Greensburg, Pa	Glass		Automobile windshield plant planned Fall '56.
Rayonier, Inc	Jesup, Ga	Chemical cellulose	30,000,000	100,000 ton/yr. plant under construction. To raise firm's annual capacity to 900,000 tons/yr. Adjacent to firm's present mill which turns out a different type of cellulose.
Reichhold Chemicals	Tacoma, Wash	Muriatic acid		Site acquired in early '56.
Reichhold Chemicals	Tuscaloosa, Ala	Sulfuric acid	1,000,000	Construction underway Oct. '55. 100 ton/day capacity. Sulfuric is new line for Reichhold. On stream by March '56.
Rico Argentine Mining	Rico, Colo	Sulfuric acid		On stream Aug. '55. 200 tons/day. AEC has now asked for increase to 400 tons/day.
Shea Chemical	Adams, Mass	Phosphoric acid, dicalcium phosphate		Plant planned.
Shea Chemical	Columbia, Tenn	Phosphorus	2,250,000	40,000 tons/yr. On stream June '56.
Shea Chemical	Dallas, Texas	Sodium phosphates, phosphoric acid	1,500,000	Capacity: 60,000 tons/yr. Due in Oct. '56.
Shea Chemical	Jeffersonville, Ind	Trisodium phosphate		Plant on stream Aug. '55.
Shell Chemical	Norco, La	Hydrogen peroxide		Construction underway late '55. Production due early '57. (At allyl chloride plant site.) 30 million lbs./yr. Nonelectrolytic hydrogen peroxide.
Sinclair Refining	Marcus Hook, Pa	Sulfur		35 ton/day unit on stream Jan. '56.
Sohio	Lima, Ohio	Dry ice or bulk liquid CO_2	800,000	Plant construction underway. Capacity 54 million lbs./yr. Full production May '56.
Stauffer Chemical (Consolidated Chem.)	Le Moyne, Ala	Sulfuric acid		New plant under construction. Completed by Nov. '56.
Stauffer Chemical	Niagara Falls, N. Y	Chlorine, caustic, chlorinated solvents		Plant expansion completed June '56.
Stauffer Chemical	Omaha, Neb	Insecticides, agricultural chemicals		Completed Dec. '55.
Stauffer Chemical	Richmond, Ohio	Boron trichloride		Plant expansion started up Oct. '55.
Stauffer Chemical	Tacoma, Wash	Liquid aluminum sulfate		Plant on stream Oct. '55. Built in conjunction with its fertilizer plant.
Stauffer Chemical	Tampa, Fla	Sulfur, insecticide concentrates, agricultural chemicals		13,000 sq. ft. bldg.; expansion underway July '55. Completed March '56.
Stauffer Chemical	Vernon, Calif	Sulfuric acid		Additional capacity under construction. Due complete May '57.
Sulphur Exploration	High Island, Tex	Sulfur		Plant construction halted for an indefinite period of time.
Synthetic Mica	Caldwell Township, N. J.	Synthetic mica	350,000	Plant construction underway. 1,000 tons/yr.
Tennessee Eastman	Kingsport, Tenn	High-purity hydrogen		Plant completed Jan. '56. Uses steam-hydrocarbon reforming process; natural gas is feed stock. Contract to Girdler.
Texas City Refining		Hydrofluoric acid		Expansion of capacity of alkylation unit from 1400 to 3000 bpd.
Tide Water Associated Oil	Delaware City, Del	Sulfur		Plant planned.
Union Chemicals & Materials		Chlorine	8,000,000	Expansion doubled chlorine output by adding 120 tons/day. On stream March '56.
Union Oil	Santa Maria, Calif	Sulfur		New unit at refinery will duplicate present unit . . . which removes 40–50 tons/day of sulfur from refinery process gases.
U. S. Flat Glass	Northern, Va	Glass	16,000,000	In operation by Summer '56. Capacity: 70 million sq. ft. sheet glass; 25 million sq. ft. plate glass.
U. S. Government	Exell, Tex	Helium	6,000,000	Plant construction underway. Capacity: 100 million cu. ft. annually. (This is half of total U. S. capacity at present.)
U. S. Gypsum	Houston, Tex	Gypsum board	1,000,000	Production underway Jan. '56.
U. S. Gypsum	New Braunfels, Tex	High purity lime		Increased capacity by 60% in expansion program.
U. S. Gypsum	Plaster City, Calif	Gypsum board		$30 million expansion program is due for further increase. New capacity will provide materials for an estimated 45,000 new homes/yr.
Van der Horst	Chicago, Ill	Chromium plated products		New plant planned. In production early '56. Capacity: 48,000 ampere-hour porous chromium plating.
Victor Chemical	Chicago Heights, Ill	Potassium poly phosphate		Plant planned.
West End Chemical	West End, Calif	Sodium sulfate coke		Doubling its 50,000 ton/yr. facilities.
Weyerhauser Timber	Longview, Wash	Chlorine		100 ton/day plant under construction.
Wyandotte	Baton Rouge, La	Chlorine, caustic soda	8,000,000	Site acquired for plant.

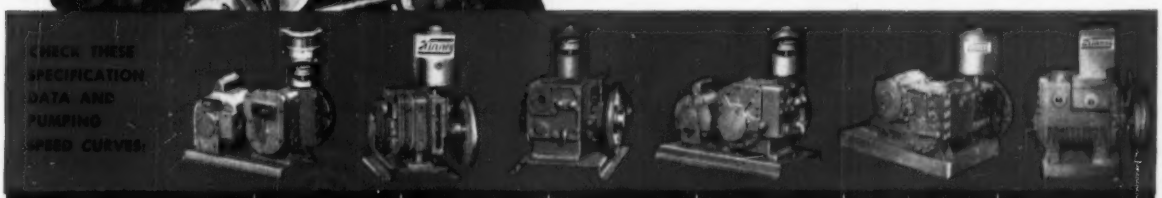
• Metals

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Alcoa	.....	Aluminum	2,500,000	Expansion planned Oct. '55. Certificate of necessity granted.
Alcoa	Massena, N. Y.	Aluminum	25,000,000	Plant conversions underway July '55.
Alcoa	Point Comfort, Tex.	Aluminum	12,000,000	20,000 ton/yr. reduction plant expansion. Completed by early '58. Due to Alcoa's growing smelter needs capacity will probably double by 1965.
Alcoa	Point Comfort, Tex.	Alumina	45,000,000	Construction underway. Capacity over 500,000 tons/yr.
Alcoa	Rockdale, Tex.	Aluminum	24,000,000	45,000 ton/yr. plant expansion under construction.
Allegheny Ludlum Steel	Brackenridge, Pa.	Titanium	1,590,000	Certificate of necessity granted for processing plant. Under construction.
Allegheny Ludlum Steel	Dunkirk, N. Y.	Titanium	400,000	Processing plant under construction.
Allegheny Ludlum Steel	Watervliet, N. Y.	Titanium	307,000	Processing plant under construction.
Anaconda Aluminum	Columbia Falls, Mont.	Primary Aluminum	65,000,000	30,000 ton/yr. plant on stream Aug. '55. Plant design adapted from Pechiney; production at lowest rate of power consumption. Expansion to 60,000 tons/yr. Jan. '56.
Columbia-Southern Chemical & Imperial Chemical Industries & Columbia Titanium	Natrium, W. Va.	Granular Titanium	10,000,000	Plant planned. Firms have asked United States Gov't for contract under which government would buy 5,000 tons/yr.
Continental Uranium	La Sal, Utah	Processed Uranium	.....	Mill construction underway. On stream Summer '56.
Cramet	Chattanooga, Tenn.	Titanium	25,000,000	Plant on stream early '56. Capacity 6,000 tons /yr.
Crane and Vitro (Heavy Minerals)	Chattanooga, Tenn.	Thorium, rare earths, heavy minerals	6,000,000	Construction underway for plant to produce heavy minerals from monazite, rutile, ilmenite, zircon and kyanite.
Dow Chemical	Midland, Mich.	Titanium	.....	Plant on stream mid-'56. Capacity: 5 ton/day.
Du Pont	(New) Johnsville, Tenn.	Titanium Sponge	40,000,000	7,500 tons/yr. Plant planned. Pending Gov't decision. Startup date 1958.
Electromet	Ashabula, Ohio	Titanium	32,000,000	7,500 ton/yr. plant. Process: use of sodium route.
Fansteel Metallurgical	.....	Tantalum-Columbium	1,000,000	Expansion program started. To be completed late '56.
Foote Mineral	.....	Metallic lithium	.....	Unit near completion. Reportedly uniquely different from government units now used.
Freeport Sulphur	New Orleans, La.	Nickel	.....	50 tons/day. New unit.
Grace, W. R. (Davison Chemical)	Curtis Bay, Md.	Rare earths, thorium	.....	Expansion planned Aug. '55.
Harvey Aluminum	The Dalles, Ore.	Aluminum	35,000,000	Plant under construction. 54,000 tons/yr. Makes Harvey 5th largest producer of primary aluminum.
Inspiration Copper	Inspiration, Ariz.	Copper Ore	3,600,000	Certificate of necessity granted.
Kaiser Aluminum & Chemical	Chalmette, La.	Primary Aluminum	2.7-3,000,000	Initial expansion. Calls for construction of Cryolite recovery plant and billet casting facilities. Completion date Oct. '56. Ninth pot line in process expanding to 247,500 tons annually at a cost of $14,500,000 by early '57.
Kaiser Aluminum & Chemical	Gramercy, La.	Alumina, caustic soda, chlorine	70,000,000	New plant under construction.
Kaiser Aluminum & Chemical	Halethorpe, Md.	Extruded Aluminum	6,500,000	Expansion underway. Capacity to be raised from 24 to 46 million lbs/yr.
Kaiser Aluminum & Chemical	Mead, Wash.	Primary Aluminum	300,000	Expansion; new reduction cells added.
Kaiser Aluminum & Chemical	Moss Landing, Calif.	Magnesia	3,000,000	Addition to sea-water magnesia plant underway. A 50% increase over present capacity. Total production increased to 375 tons/day.
Kaiser Aluminum & Chemical	Ravenswood, W. Va.	Aluminum Sheet Foil	100,000,000	Expansion on stream by '57. From 250 to 338 million lbs./yr. sheet foil and plates. Adjacent to reduction plant.
Kaiser Aluminum & Chemical	Ravenswood, W. Va.	Primary aluminum	76,000,000	Under construction; annual capacity 125,000 tons; completed by early '58.
Kaiser Aluminum & Chemical	Tacoma, Wash.	Primary aluminum	2,250,000	Expansion; installation of additional 18 reduction cells capable of producing 10 million lbs./yr. Brings plant total capacity to 77.5 million lbs./yr. from 67.5. Now in production.
Kaiser Aluminum & Chemical	Trentwood, Wash.	Aluminum	.....	Expansion of rolling mill.
Lindsay Chemical	West Chicago, Ill.	Purified crude rare earth fractions	.....	New unit on stream. Uses ion exchange process which involved citric acid solution of rare earths. 50 lb./day.
Merritt-Chapman & Scott (Tennessee Products & Chemical)	Rockwood, Tenn.	Ferroalloys	2,500,000	New electric furnace plant.
Metal & Thermit	Montpelier, Va.	Titanium	750,000	Processing plant under construction.
Mineral Sands	Bandon, Ore.	Chromite	3,000,000	New plant; 200 tons/day. On stream early '56.
National Research	Pensacola, Fla.	Zirconium	.....	Plant planned. To use process involving nitric acid and ammonia. Probably will employ hafnium separation technique.

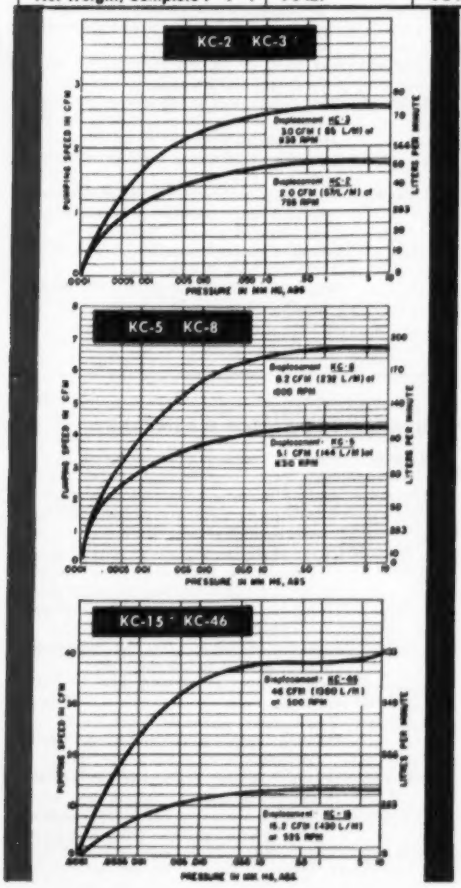


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SPECIFICATIONS	MODEL KC-2	MODEL KC-3	MODEL KC-5	MODEL KC-8	MODEL KC-15	MODEL KC-46
Free Air Displacement . . .	2.0 CFM	3.0 CFM	5.1 CFM	8.2 CFM	15.2 CFM	46.0 CFM
Free Air Displacement . . .	56.5 Liters/min.	85.0 Liters/min.	144. Liters/min.	232. Liters/min.	430 Liters/min.	1300 Liters/min.
Free Air Displacement . . .	.95 Liters/sec.	1.41 Liters/sec.	2.4 Liters/sec.	3.9 Liters/sec.	7.2 Liters/sec.	21.7 Liters/sec.
RPM	755	1135	630	1000	525	500
Motor H.P.	¼	⅓	⅓	½	1	3
Motor RPM (syn.)	1800	1800	1800	1800	1800	1800
Oil Capacity	6 oz.	6 oz.	1⅓ pt.	1⅓ pt.	2 qt.	1 gal.
Shaft Diam.	¾"	¾"	¾"	¾"	⅝"	1⅛"
Inlet Connection	¾" Screwed	¾" Screwed	1" Screwed	1" Screwed	2" Screwed	3" Screwed
Outlet Connection	None	¾" Screwed	1" Screwed	1" Screwed	1¼" Screwed	1½" Screwed
Net Weight, Complete . . .	70 lb.	78 lb.	140 lb.	148 lb.	300 lb.	585 lb.



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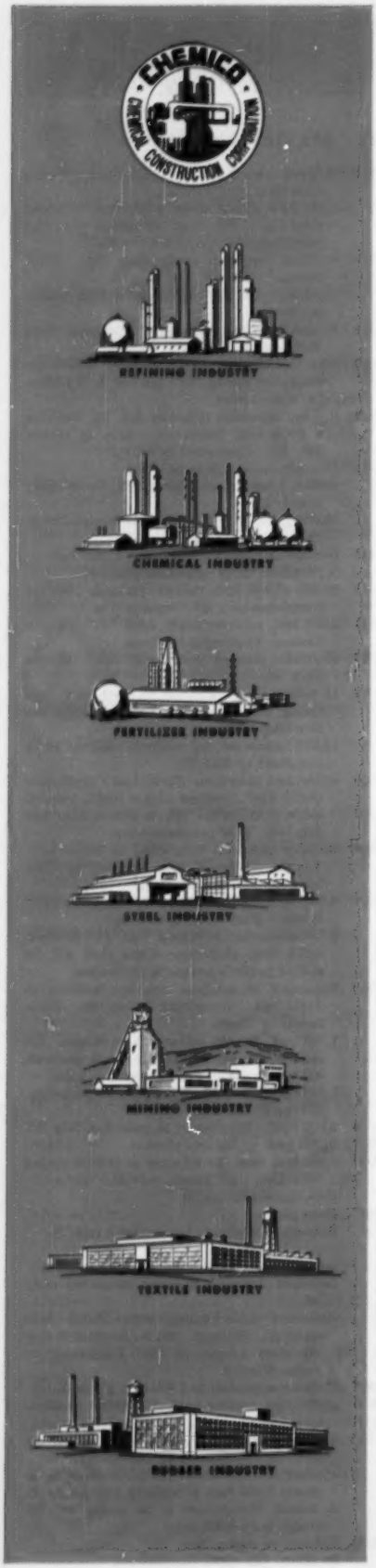
METALS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Norton Company	Huntsville, Ala.	Magnesia, zirconia, boron carbide	1,300,000	New plant under construction.
Ohio Oil-Pew Associates		Uranium		First uranium-from-lignite plant probably to be built by Catalytic Construction. Only lack of AEC price schedule delays final contracts.
Olin Mathieson Chemical	Creasp, W. Va.	Aluminum & alumina	90,000,000	Certificate of necessity received July '56. 230,000 tons/yr. alumina; 60,000 tons/yr. aluminum capacity. Plant on stream Spring '56.
Pittsburgh Metallurgical	Calvert City, Ky.	Ferro alloys	1,000,000	Expansion of capacity. No date yet.
Arizona-Colconda Metals	Kingman, Ariz.	Recovered rare metals	2,500,000	New mill planned.
Rare Metals	Tuba City, Ariz.	Processed Uranium Ore	2,000,000	Signed AEC contract to build & operate uranium ore processing plant. Completed mid-April '56.
Rare Metals	Weiser, Ida.	Mercury		Plant due on stream in '56. Capacity 170 tons/day.
Revere Copper & Brass	Wenatchee, Wash.	Aluminum	52,700,000	New plant planned Sept. '55. 60,000 tons/yr.
Reynolds Metals	Kentucky, (Ohio River Valley)	Aluminum	168,500,000	New plant; 100,000 tons/yr.
Reynolds Metals	Lister Hill, Ala.	Aluminum	13,500,000	Expansion of plant. Completed Aug. '56; increased to 140 million lbs./yr.
Reynolds Metals	Texas	Aluminum		New plant under construction. Capacity 20 million lbs./yr. Due in '56.
Reynolds Metals	Corpus Christi, Tex.	Alumina	25,000,000	Expand capacity 50% or to over 1500 t/d.
Reynolds Metals	Corpus Christi, Tex.	Aluminum	8,500,000	Expansion of plant. Additional capacity: 10,000 tons/yr.
Reynolds Metals	Jones Mills, Ark.	Aluminum	1,500,000	To increase capacity 200,000 lb./yr.
St. Joseph Lead & Pittsburgh Cons. Coal	Josephtown, Pa.	Aluminum	85,000,000	66,000 ton/yr. Plant construction underway Fall '55.
Titanium Metals	Henderson, Nev.	Titanium Sponge		A 67% expansion of production will raise output from 3,600 to 6,000 tons/yr. by late '56.
Trace Elements Corp.	Northwestern, Colo.	Uranium, Vanadium	1,000,000	New mill authorized by AEC; late '56 or early '57 completion date has been scheduled. Percolation method used on low-grade uranium ores.
Union Carbide (Electro Metallurgical)	Ashtabula, Ohio.	Titanium Sponge	31,500,000	New plant to use sodium reduction process. On stream Mid-'56, capacity 7,500 tons/yr.
Union Carbide (Linde Air Products)	Long Reach, W. Va.	Silicones	14,000,000	Plant construction underway Aug. '55.
Union Carbide (Nuclear Div.)	Uravan, Colo.	Uranium		Expansion of mill to be completed by Fall of '56.
United International Research	Lodi, N. J.	Titanium Powder		New facility on stream July '55.
U. S. Vanadium	Uravan, Colo.	Uranium		Expansion of processing facilities planned Oct. '55.
Uranium Reduction Company	Moab, Utah	Uranium	8-10,000,000	New mill; construction underway. Ready summer '56. Designed to use the AEC's resin-in pulp process; researched by Nat'l. Lead & Amer. Cyanamid. Ore-up to 1,000 tons/day from MiVida mine.
Vitro Corp. of America	Salt Lake City, Utah	Processed Uranium		70% expansion of mill from 5,000 to 9,000 tons/month more processed ore.

• Petroleum & Natural Gas Products

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
American Gilsonite	Fruita, Colo.	Gasoline, metallurgical coke.	10,000,000	7,000 bpd. refinery under construction. Due late '56.
American Oil	Yorktown, Va.	Refined petroleum	30,000,000	Refinery to be completed in Nov. '56. Full operation by early '57. 35,000 bpd. Engineered by Kellogg.
Anderson Prichard Oil	Arkansas City, Kans.	Reformed petroleum	750,000	4,000 b/d Platforming unit on stream. Soon to be operated as Rexformer.
Arkansas Fuel Oil	Carthage, Tex.	Reformed petroleum		900 bpd. reformer ready May '56. UOP Process.
Ashland Oil & Refining	Catlettsburg, Ky.	Reformed petroleum		Houdriformer on stream Aug. '55. Nominal capacity 6,000 BPSD.
Ashland Oil & Refining	Findlay, Ohio.	Reformed petroleum		3,000 bpd. reformer; 4,000 bpd hydrogenation unit. Both on stream early '56.
Atlantic Refining	Lovington, N. M.	Natural gasoline		25 mmcf. unit planned April '56.
Atlantic Refining	Philadelphia, Pa.	Jet fuel	450,000	ODM approved.
Atlantic Refining	Pt. Arthur, Tex. & Philadelphia, Pa.	Reformed petroleum	11,000,000	Two catalytic-reforming units to be built. Initial operation scheduled for Mid-'57. Engineered by Blaw-Knox. 15,000 bpd.
Aurora Gasoline	Detroit, Mich.	High-Octane gasoline	5,000,000	A UOP 5,500 bpd. rexforming unit (converting platforming unit) by adding new selective octane extraction process. On stream early '56. To turn out over—100 octane premium gas. First in U. S. on stream.

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Aviation Fuels	Beaumont, Tex	Aviation fuels	24,070,000	Refinery planned. ODM approved. Status uncertain.
Bankline Oil	Bakersfield, Calif	Petroleum, coke & alkylates	.....	4,000 bpd. coking plant, 4,000 bpd. catalytic reformer, 1,500 bpd. alkylation unit—all ready July '56. Engineered by Fluor.
Bay Petroleum	Chalmette, La	Refined petroleum	1,850,000	Refinery expansion ready May '56. UOP license.
Berry Asphalt	Chicago, Ill	High-octane gasoline	.....	Planned. Upgrade naphthas to high octane gasoline.
California Oil	Perth Amboy, N. J.	Petroleum Products	1,000,000	Expansion to raise capacity of Platformer from 10,000 to 12,500 bpd.
Carter Oil	Billings, Mont	Refined Petroleum	1,000,000	2,500 bpd Hydroformer, 6,900 bpd. Hydrofiner completed Spring '56. Esso R & E license. Fluor engineered.
Cities Service	Ponca City, Okla	Refined petroleum	5,000,000	Refinery expansion underway Jan. '56. Includes a 6,000 bpd. Rexformer. Due on stream Jan. '57. Engineered by UOP.
Cities Service	Ponca City, Okla	Petroleum alkylates	2,345,000	New alkylation unit to be added.
Cities Service	Midland, Tex	Natural gasoline	.....	50 Mmcf. unit under construction. To be ready March '57.
Cities Service	Seminole, Tex	Natural gasoline	.....	55,000 gal./day unit planned for completion in 1956.
Clark Oil & Refining	Milwaukee, Wis	Refined petroleum	1,750,000	Increase capacity and efficiency: 15,000 bpd.
Columbian Carbon	Northbend, La	Carbon black	.....	A 20 million lb./yr. expansion planned.
Commerce Oil Refining	Portsmouth, R. I	Refined Petroleum	30,000,000	30,000–45,000 bpd. refinery planned. Set for completion early '57. Engineered by Lummus.
Continental Oil	Artesia, N. M	Reformed petroleum	500,000	1,500 bpd. reformer ready June '56. Houdry License. Engineered by Treco.
Continental Oil	Billings, Mont	Refined petroleum	1,000,000	Expansion planned. 8,500 bpd. unit on stream April '56.
Continental Oil	Ponca City, Okla	Dairy Wax	450,000	11 million lb./yr. addition to plant on stream Spring '56. Previous annual production was 20 million lb./yr.
Continental Oil	Ponca City, Okla	Reformed petroleum	.....	11,000 barrels per day catalytic reformer to be completed by Mid-'57.
Cooperative Refinery	Coffeyville, Kans	Reformed petroleum	4,450,000	Revamped catcracker (8,500 bpd.) platformer (5,000 bpd), Unifiner (3,000 bpd.), delayed coker (8,440 bpd). All on stream May and July '56. UOP process licenses.
Corpus Christi Refining	Corpus Christi, Tex	Refined petroleum	1,200,000	Refinery expansion from 7,000 to 10,000 bpd. Vacuum-distillation unit enlarged to 3,500 bpd. visbreaking unit added.
Cosden Petroleum	Big Spring, Tex	Reformed petroleum	2,500,000	3,900 bpd. Rexformer ready July '56. UOP license. Engineered by Procon.
Cosden Petroleum	Big Spring, Tex	Upgraded motor fuel	.....	3,700 catcracker on stream Fall '55. Existing 4,275 bpd. platformer—Udex unit will be shifted to 100% aromatics production.
D-X Sunray Oil	Duncan, Okla	.....	250,000	Expansion of catalytic cracking facilities to 5,000 bpd. Completed Spring '56. Engineered by Treco.
D-X Sunray Oil	West Tulsa, Okla	Gas, oil, coke	.....	7,000 bpd delayed coking unit on stream. To replace viscosity-breaking unit. It produces 4,000 bpd. gas oil and 240 tons/day coke.
Darby Refining	Wichita, Kans	Refined Petroleum	.....	5,000 bpd. crude revamper under construction. Due on stream Dec. '56.
Derby Oil	Wichita, Kans	Reformed petroleum	700,000	2,500 bpd. Ultraformer in operation July '56.
Eastern States Petroleum	Houston, Tex	Petroleum coke	4,000,000	13,000 bpd. coking unit planned.
El Dorado Refining	El Dorado, Kans	Reformed Petroleum	500,000	2,500 bpd. catalytic reformer on stream Spring '56. Uses UOP license.
El Paso Natural Gas Products	El Paso, Tex	Petroleum Alkylates	.....	Unit planned Spring '56.
Escambia Bay Chemical	Pensacola, Fla	Acetylene	Multi-million	Plant planned.
Esso Standard Oil	Baton Rouge, La	Aviation gasoline, lubricating oil, wax, ethylene and butadiene	40,000,000	Refinery expansion to be completed mid-'58.
Esso Standard Oil	Bayonne, N. J	Refined petroleum	.....	Increased dewaxing capacity completed early '56.
Esso Standard Oil	Linden, N. J	Reformed petroleum	.....	Fixed-bed hydroforming unit: 20,000 bpd. capacity. Planned. Set for completion during third quarter of '58. Engineered by Foster Wheeler.
First National Petroleum	Jensen, Utah	Refined petroleum	1,250,000	Refinery expansion; to 3,000 bpd. planned.
Fletcher Oil	Wilmington, Calif	Upgraded gasoline	976,000	10,000 bpd. topping unit. Has ODM certification.
Frontier Oil Refining	Tonawanda, N. Y	Refined petroleum	2,000,000	6,000 bpd. catalytic cracker due on stream Oct. '56. Engineered by Blaw-Knox.
Frontier Refining	Cheyenne, Wyo	Naphtha	.....	Platformer—Uniformer units on stream to reform 2,000 bpd. of naphtha from crude oil.
General Petroleum	Ferndale, Wash	Petroleum products	.....	A second Sovaformer to be added by '57. Design is for 9,000 bpd.
Great Northern Oil	Williston Basin, Minn	Gasoline	25,000,000	Refinery on stream Nov. '55.
Gulf Natural Gas	Caddo Parish, La	Natural gasoline	.....	20 Mmcf. unit under construction.



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PETROLEUM & NATURAL GAS PRODUCTS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Gulf Oil	Philadelphia, Pa.	Petroleum products	35,000,000	Expansion of refinery: (1) 26,000 b/d Platformer. (2) 3,000 b/d sulfuric-acid alkylation unit. (3) 22,500 b/d viscosity-breaking unit. (4) 2 Gulfining units 20,000 b/d each. To desulfurize and upgrade home-heating oils. All on stream late '56 or early '57.
Gulf Oil	Port Arthur, Tex.	Petrochemicals	800,000	New catalytic reformer on stream. Capacity 29,000 bpd. Designed by Universal Oil Products and erected by Fluor. Installation is the biggest of its type in the world.
Gulf Oil	Port Arthur, Tex.	Reformed & refined petroleum, alkylates.		Two 45,000 bpd. gulfiners; 100,000 bpd. crude topping unit; 68,500 bpd. catcracker; 3,300 bpd. alkylation unit; 125 ton sludge decomposer—All due on stream in '56.
Gulf Oil	Toledo, Ohio	Refined petroleum		New UOP platforming unit on stream; capacity 10,000 bbl./day.
Hancock Oil	Signal Hill, Calif.	Petroleum coke	2,800,000	Fluid coking unit (6,000 bpd.) ODM certified Spring '56, and 3,000 bpd. catalytic reformer ready July '56.
Huber, J. M., Corp.	Borger, Tex.	Carbon black		Expansion in fuel operation by late '56. 20-30 million lbs./yr. more.
Indiana Farm Bureau Cooperative	Mt. Vernon, Ind.	Reformed petroleum	1,250,000	3,000 bpd. Platformer and a 2,100 bpd. Unifirmer planned. In operation Aug. '56. Uses UOP process; engineered by Sweco.
Ingram Oil & Refining	Meraux, La.	Reformed petroleum	1,000,000	3,000 bpd. catalytic reformer on stream in May '56. UOP license. Engineered by Sweco.
Jefferson Lake Sulphur	St. Mary Parish, La.	Hydrocarbons & Natural gas.		Plant completed by late '55. 40 million cu. ft. gas/day. New Rotasorber process to recover natural gas & hydrocarbons from pipe-lines.
Lake Charles Chemical	Lake Charles, La.	Petroleum coke	6,250,000	A 10,000 bpd. delayed coking and cracking unit due on stream late '57. Contract to Fluor Corp. Unit will be physically integrated with Continental Oil's refinery.
Leonard Refineries	Alma, Mich.	Refined petroleum		Refinery expansion: additional 14,000 b/d. Addition of hydrofiner; capacity 5,200 b/d. and Ultraformer; capacity 3,500 b/d. Engineered by Parsons.
Lynn Carbon Black	San Angelo, Tex.	Carbon black		On stream Spring '56.
Magnolia Petroleum	Beaumont, Tex.	Refined petroleum processed butanes & propanes.	25,000,000	Sixth project construction program expansion planned. In operation by Fall '56. Includes a thermofor catalytic cracking unit 28,000 b/d (largest of its kind ever built) and a Sovaformer unit (first process in the Southwest) 20,000 b/d capacity Lube blending and 15,000 bpd. crude distillation due late '56.
Malco Refineries	Norwalk, Calif.	Petroleum refinery	3-4,000,000	Refinery expansion to raise antiknock quality of gasoline output. (24,000 b/d output.)
McBride Refining	Port Brownsville, Tex.	Refined petroleum	2,500,000	12,500 bpd. unit planned in expasion program.
Midland Coop	Cushing, Okla.	Reformed petroleum	650,000	3,000 bpd. Platformer completed April '56. UOP process.
Naph-Sol Refining	Muskegon, Mich.	Reformer petroleum		6,000 bpd. catalytic reformer planned as of April '56.
National Refineries	Wrenshall, Minn.	Reformed petroleum	1,500,000	10,000 b/d plant under construction Jan. '53. 2,800 bpd. catalytic reformed added by Fall '56. (To use Esso process.) Project engineered by Parsons.
North American Petroleum	Corpus Christi, Tex.	Reformed petroleum		2,000 bpd. catalytic reformer planned.
Northwestern Refining	St. Paul Park, Minn.	Reformed petroleum	4,300,000	6,000 bpd. catalytic reformer completed May '56.
Pana Refining	Pana, Ill.	Refined petroleum		Girbitol unit under construction Spring '56.
Paragon Oil	Tiverton, R. I.	Fuel oil, gasoline, high octane argas, jet fuel.	38,000,000	30,000 bpd. refinery planned.
Pennzoil	Rouseville, Pa.	Reformed petroleum		Platformer—Unifining unit completed early '56. A 2,000 bpd. UOP Process used.
Petroleum Separating	Bayonne, N. J.	Refined petroleum		Crude skimming facilities for 15,000 bpd. under construction. Due for completion May '57. Uses UOP process. Engineered by Fluor.
Phillips Chemical	Borger, Tex.	Carbon black		A 64 million lb./yr. plant under construction.
Phillips Petroleum	Andrews, Tex.	Natural gasoline		80 Mmcf. unit due in operation in '56.
Phillips Petroleum	Crane, Tex.	Natural gasoline		50 Mmcf. unit due on stream in '56.
Phillips Petroleum	East Chicago, Ind.	Refined petroleum		Expansion completed Sept. '55.
Phillips Petroleum	Kansas City, Kan.	Refined petroleum	5,400,000	Refinery expansion: Addition of 16,000 bpd. catalytic reformer unit. On stream July '55. Expansion of lube unit by 20% ready by Fall '56.
Phillips Petroleum & Magnolia Petroleum	Lindsay, Okla.	Natural gasoline		60 Mmcf. unit completed Spring '56.

PETROLEUM & NATURAL GAS PRODUCTS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Phillips Petroleum	Sweeney, Tex	Petroleum alkylates, natural gasoline	.....	5,000 bpa. Alkylation unit on stream Nov. '55; 30,000 bpd. natural gas liquid fractionation unit due by Fall '56. (Stone & Webster-Badger—Engineered.) 5,500 bpd. gas cracking facilities ready by Spring '57; and 2,000 bpd. alkylation unit due Dec. '56.
Pontiac Refining (Pontiac Eastern)	Hattiesburg, Miss	Refined petroleum	18,000,000	12,000 b/d. Refinery includes facilities for fluid coking, unifinery, platforming, vacuum distillation, thermofor catalytic cracking, sulfuric-acid alkylation electric desalting. Engineered by Fluor.
Portland Gas & Coke	Portland, Ore	Hydrocarbon	16,000,000	Plant under construction Jan. '56. Switching production 40 high Btu. gas for integration with natural gas. Increased by-product chemicals production results.
Prime Oil	Calumet City, Ill	Refined petroleum	10,000,000	15,000 bpd. refinery planned Spring '56.
Pure Oil	Lemont, Ill	Reformed petroleum	.....	Catalytic reformer planned Spring '56.
Pure Oil	Smiths Bluff, Tex	Refined petroleum	.....	Refinery expansion: 15,000 bpd. Ultraformer and 20,000 bpd. feed preparation. Under construction Aug. '55. 12,000 bpd. catalytic reformer on stream Summer '56. (Engineered by Parsons.)
Queen City Oil & Refining	Dickenson, N. D	Petroleum products	.....	Expansion: Fluid catcracking unit planned at refinery. Due on stream by Oct. '56.
Republic Refining	Texas City, Tex	Refined petroleum	600,000	20,000 bpd. revamp thermal cracker ready July '56. UOP is licensor; engineered by Treco.
Richfield Oil	Watson, Calif	Reformed petroleum	.....	New catalytic reformer. Capacity 17,000 bpd. Ready mid '56. Has Sinclair-Bakers license.
Rothschild Oil	Santa Fe Springs	Refined petroleum	2,000,000	6,000 bpd. catalytic cracker under construction.
Salt Lake Refining	Salt Lake City, Utah	Refined petroleum	.....	Increasing capacity to 5,000 bpd.
Seminole Oil	Fort Pierce, Fla	Refined petroleum	16,000,000	Refinery planned for completion Fall '56. Engineered by Ebasco.
Shell Oil	Houston, Tex	Reformed petroleum	.....	16,000 bpd. catalytic reformer and 16,000 bpd. hydro-desulfurization units under construction.
Shell Oil	Wood River, Ill	Petroleum products	.....	20,000 bpd. platformer under construction Spring '56.
Sinclair Refining	East Chicago, Ind	Petroleum products	1,300,000	Refinery expansion; hydrofinishing unit using hydrogen from a catalytic reformer; to be completed late '56.
Sinclair Refining	Houston, Tex	Reformed petroleum	16,500,000	24,000 bpd. catalytic reformer on stream early '56. Licensor: Sinclair; engineered by Kellogg.
Sinclair Refining	Wood River, Ill	Reformed petroleum	.....	7,500 barrel per day unit planned. On stream by early '57. To use the Sinclair-Baker platinum catalyst.
Sioux Oil	Newcastle, Wyo	Refined petroleum	225,000	A 750 bpd unit (houdriformer) at refinery completed April '56. Capacity of crude processing unit to be increased. Houdry license.
Skelly Oil	Denver, Colo	Reformed petroleum	.....	Catalytic reformer completed Spring '56.
Socony Mobil Oil	Buffalo, N. Y	Upgrade motor oil	.....	New catalytic Sovaformer unit completed mid '56. Capacity: 9,000 bbl./stream day.
Socony Mobil Oil	Casper, Wyo	High-octane gasoline	.....	Thermal cracking unit ready June '56. Stearns-Rogers engineered.
Socony Mobil Oil	East St. Louis, Ill	Petroleum products	.....	(1) Sovaforming unit planned 12,000 b/d capacity. (2) Sovaforming unit for pretreating reformer feedstock; 16,000 bpd. Both due on stream early '57. Engineered by Fluor.
Socony Mobil Oil	East Chicago, Ind	Reformed petroleum	.....	Sovaformer, alkylation and 30,000 bpd. crude units due in Dec. '56, Feb. '56 and May '56 respectively.
Socony Mobil Oil	Paulsboro, N. J	Upgraded distillate fuels	.....	Plans for hydrodesulfurization unit to upgrade distillate fuels. To be completed March '57. Capacity 22,000 bpd.
Socony Oil	Toledo, Ohio	Petroleum alkylates	1,200,000	Alkylation unit under construction Jan. '56. 1,400 to 1,600 bpd. To be completed April '56.
South Penn Oil (Pennsoil Div.)	Oil City, Pa	Petrochemicals	.....	Installation of processing equipment during last months of '55 marked South Penn's entry into petrochemical field.
Southland Oil	Tampa, Fla	Jet fuel, asphalt, hi-octane gasoline	25,000,000	Plant planned: to include catalytic cracker, catalytic reformer and alkylation unit. Initial capacity of 15,000 bpd. To be increased to 60,000 bpd. ultimately.
Southwestern Oil & Refining	Corpus Christi, Tex	.....	2,195,000	9,000 bpd. Platformer ready May '56. UOP license. Engineered by Treco.
Spokane Gas & Fuel	Spokane, Wash	Gasoline	5,000,000	Expansion underway Aug. '55.
Standard Oil (Calif.)	El Paso, Tex	Upgraded gasoline	.....	Catalytic reformer under construction July '55.
Standard Oil (Calif.)	El Segundo, Calif	Upgraded gasoline	50,000,000	Large refining unit planned July '55. Uses Houdry process. 18,000 ton/yr. capacity.



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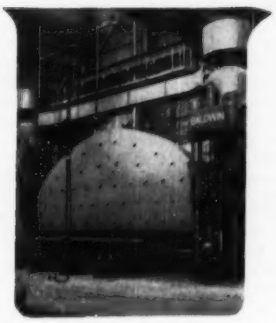
CATALYTIC *ON-TIME...*
***ON-BUDGET* SERVICES**
for the metallurgical, chemical, petrochemical and oil refining industries: Project Analysis; Process Development; Process Design; Economic Studies; Engineering; Procurement; Construction; Plant Operation

Inquiry Code Number for This Advertisement-29

PETROLEUM & NATURAL GAS PRODUCTS, continued

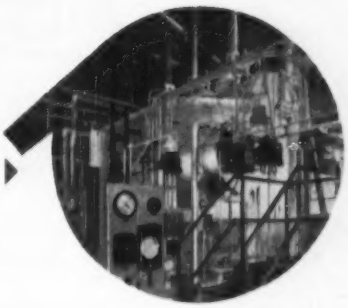
FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Standard Oil (Calif.)	Richmond, Calif	Upgraded gasoline	50,000,000	Catalytic reformers completed (part of total program at Richmond).
Standard Oil (Ind.)	Whiting, Ind	Xylene		Plant construction scheduled for early Fall '56. To use scientific design's xylene oxidation process.
Standard Oil (Ind.)	Casper, Wyo	Petroleum products		Lubricating oil plant planned; includes 4,800 bpd pipe still: 1,000 bpd propane desasphalting unit; 1,500 bpd furfural extraction unit; 2,000 bpd methyl ethyl ketone dewaxing unit and 5,000 bpd. lube oil plant.
Standard Oil (Ind.)	Mandan, N. D	Refined petroleum		Refinery completed Aug. '55. Capacity 30,000 bpd. Ultraformer under construction. To be ready by late '56.
Standard Oil (Ind.)	Sugar Creek, Mo	Petroleum alkylates	3,500,000	5,800 bpd. alkylation under construction. To be completed by early '57. Engineering by Foster Wheeler.
Standard Oil (Ind.)	Whiting, Ind	Refined petroleum		Ultraforming unit (originally, slated for '57). On stream April '56. Duplicate of unit at Sugar Creek, Mo. Capacity 14,000 bpd. 5,000 bpd. dewaxing unit under construction. Engineered by Foster Wheeler.
Standard Oil (Ind.)	Wood River, Ill	Petroleum coke		8,500 bpd. coking unit planned for '57 completion.
Standard Oil (Ohio)	Cleveland, Ohio	Reformed petroleum	4,400,000	11,000 bpd. Ultraformer due for completion mid '56. Engineered by Fluor.
Standard Oil (Ohio)	Toledo, Ohio	Petroleum products	25–30,000,000	New facilities at refinery on stream March '56. To operate on sour crude oil.
Standard Oil (Texas)	El Paso, Tex	Refined petroleum		Expansion from 36,000 to 61,000 bpd. underway Feb. '56.
Stanolind Oil & Gas	Ector County, Tex	Natural gasoline	209,000	Expansion of gas completed. Now set at 52 Mmcf. Ready April '56.
Straits Refining	Puget Sound, Wash	Aviation gas & jet fuels	26,400,000	Refinery planned; 10,000 b/d formerly planned for Beaumont, Tex.—but, gov't won't buy the products at that location.
Sun Oil	Marcus Hook, Pa	Reformed petroleum		Houdriflow catalytic cracking unit on stream. 27,000 bpd. nominal design capacity. Houdriformer unit on stream 18,000 bpd. capacity.
Sun Oil	Toledo, Ohio	Reformed petroleum, petroleum alkylates	1,200,000	Houdriflow catalytic cracking unit on stream. 24,000 bpd. (Nominal design capacity.) Alkylation unit planned-undisclosed size.
Sunray Mid-Continent Oil	Corpus Christi, Tex	Gasoline		Low temperature, absorption type plant with dehydration facilities under construction Oct. '55.
Sunray Mid-Continent Oil	Sarapta, La	Natural gasoline	225,000	7.5 Mmcf. cycling plant expansion. On stream May '56.
Sunray Mid-Continent Oil	Ingleside, Tex	Natural gasoline	3,000,000	140 Mmcf. unit ready Feb. '56.
Sunset Oil	Portland, Ore	Refined petroleum		20,000 bpd. refinery under consideration.
Sunshine State Refineries	Tampa, Fla	Refined petroleum	10,000,000	Refinery planned. Estimated capacity 10,000 bpd.
Suntide Refining	Corpus Christi, Tex	Reformed petroleum		Refinery on stream Jan. '56. Capacity 50,000 to 65,000 bpd. 15,000 bpd. Rexformer under construction April '56. Expansion on stream July '56.
Texas Asphalt & Refining	Pasadena, Tex	Asphalt	1,000,000	A 2,500 bpd. refinery on stream mid '56. Engineered by Ponca.
Texas Butadiene & Chemical	Houston, Tex	Aviation alkylate, butylenes	26,000,000	Units under construction. Ready late '56. Houdry, Phillips licenses. Engineered by Fluor.
Texas City Refining	Texas City, Tex	Reformed petroleum, petroleum alkylates		6,000 bpd. catalytic reformer planned; UOP alkylation unit on stream.
Texas Co	Anacortes, Wash	Refined petroleum		Refinery under consideration: capacity 35,000 to 40,000 bpd.
Texas Co	Casper, Wyo	Reformed petroleum		4,800 bpd. catalytic reformer ready mid '56. UOP license.
Texas Co	Lockport, Ill	Petroleum alkylates		1,000 bpd. alkylation unit ready early '56.
Texas Co	Lockport, Ill	Reformed petroleum		Converting Hydroformer into Platformer. 10,000 bpd. Due on stream Fall '57.
Texas Co	Port Arthur, Tex	Oil additives		Plant planned.
Texas Co	Port Arthur, Tex	Refined petroleum		86,000 bpd. crude unit; 60,000 bpd. catalytic cracking unit, construction underway late '56. To be completed by late '57. Also to increase capacity of alkylation unit by 2,000 bpd.
Texas Co	Westville, N. J	Petroleum	2,100,000	Construction underway of hydro-treator (6,500 bpd.) and viabreaker (13,300 bpd.) both completed Fall '56. Engineered by Treco.
Texas Co	Wilmington, Calif	Refined petroleum		13,000 bpd. butane desasphalting unit on stream Fall '56.
Texas Gas	Winnie, Tex	Reformed petroleum		New 2,500 bpd UOP Platforming unit on stream Sept. '55.

How FW serves the CHEMICAL INDUSTRY



MANUFACTURING FACILITIES

Metal forming, welding and machining facilities of exceptional size and capacity are available at three FW plants, for fabrication of high pressure vessels, pressure piping and heavy weldments to Code requirements and beyond. Bulletin GS-56-4.

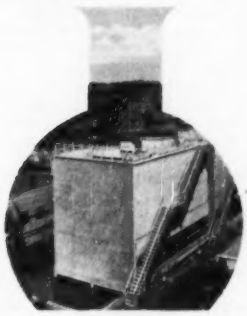


PROCESS HEATING SYSTEMS

FW can design and install Dowtherm high-temperature, low-pressure heating systems for any process requirements—in capacities from 44,500 to 45,000,000 btu/hr. Bulletin ID-54-5.

COOLING TOWERS

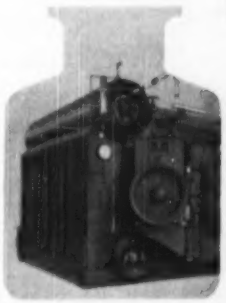
FW offers a complete new line of induced-draft, counter-flow cooling towers, designed and built to meet the specific needs of the chemical and process industries with maximum dependability and long-range economy. Bulletin CT-56-1.



STEAM GENERATORS

New FW Packaged Steam Generators, in capacities from 10,000 to 50,000 lb/hr, are completely shop fabricated and shipped ready to install. Bulletin PG-55-3.

Series "SC" Steam Generators, in capacities from 50,000 to 150,000 lb/hr, are of pre-engineered, standardized design, offering important savings in steam cost. Bulletin B-55-4.



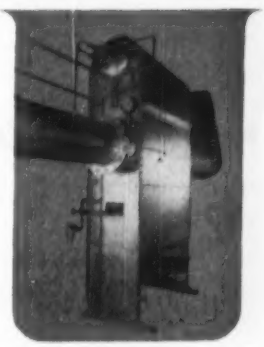
HEAT EXCHANGERS

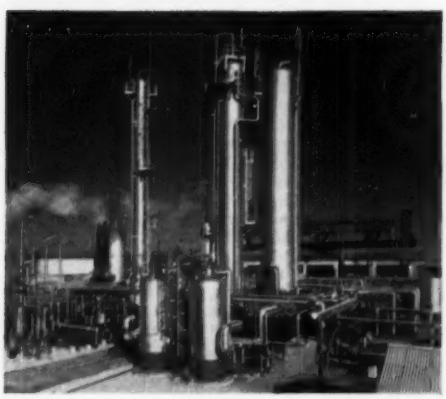
FW can supply standard, normal-duty heat exchangers and heat absorbers of all types, designed and fabricated to meet any specific requirements. Also corrosive-resistant units of high-conductivity "Karbate." Bulletin OH-49-1.



WASTE HEAT BOILERS

FW Waste Heat Boilers utilize hot exhaust gases from chemical processes, kilns, Diesels or other engines—converting this otherwise wasted energy into usable steam. Bulletin WHB-47-4.





PROCESS PLANTS

FW can design, engineer and construct complete plants or individual process units for any of the following:

Ammonia Synthesis by the Casale Process. Nine FW ammonia plants, "on stream" or under construction, have a combined capacity of 1585 T/D. Bulletin O-54-1.

Urea by the low cost, least corrosive Pechiney Process.

Fat and Oil Processing for fat splitting, fatty acid distillation, hydrogenation, esterification, oil bodying. Bulletin ID-49-12.

Chemical Plants for phenol, sulfur recovery, phthalic anhydride and many other processes.

Petroleum Refining & Processing by practically every process now in use.

For detailed information on any of the above items, write us on your company letterhead stating the bulletin or subject in which you are interested. Address: *Foster Wheeler Corporation, 165 Broadway, New York 6, N.Y.*

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PETROLEUM & NATURAL GAS PRODUCTS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Texas Gulf Producing	Odessa, Tex	Natural gasoline	1,250,000	35 Mmcf. unit under construction.
Tide Water Associated Oil	Avon, Calif	Heavy fuel oils	25,000,000	Second commercial fluid coker under construction Fall '55. Capacity: upgrade 42,000 bbls /day. Hydrodesulfurization unit under construction Jan. '56. 24,000 bpd. gasoline plant planned. Fluid catalytic cracker expanded. All due on stream Fall '56.
Tide Water Associated Oil	Wilmington, Del	Refined petroleum	110,000,000	Three new refining units; 130,000 b/d crude unit. 42,000 b/d coking unit. Orthoflow fluid catalytic cracking unit in capacity of 102,000 bpd. Construction underway; on stream late '56. Engineered by Brown, Kellogg.
Union Oil (Calif.)	Edmonds, Wash	Asphalt	400,000	Expansion of refinery; two additional stills for air-blown asphalt. To be erected next to existing stream blowers asphalt facilities Puget Sound. Completed early '56.
Union Oil (Calif.)	Los Angeles, Calif	Lube oil	3,000,000	Lube oil blending unit on stream early '56.
Union Oil	Parachute Creek, Colo.	Shale oil	56-75,000,000	First big U. S. oil-shale retort under construction. Capacity 1,000 tons/daily. Eventual aim is full-scale 40,000 bbl./day plant.
U. S. Oil & Refining	Tacoma, Wash	Refined petroleum	10,000,000	Refinery; construction underway Oct. '55. 15,000 bpd. ready 1957. UOP process.
U. S. Pipe & Foundry		Coke		New unit under construction; 3,500 tons/day.
U. S. Rubber	Baton Rouge, La	Petrochemicals	5,000,000	Unit under construction; Completion slated for July '57. Engineered by Tellepsen.
Utah Oil Refining	Salt Lake City, Utah	Refined petroleum	3,000,000	New ultraforming unit. Contract to Fluor Corp. Capacity 5,500 bpd. Ready May '56. Has Standard Oil (Ind.) License.
Vickers Petroleum	Potwin, Kans.	Reformed petroleum		Cetalytic reformer planned April '56.
Western States Refining	North Salt Lake City, Utah	Refined petroleum	300,000	Houdriformer: Capacity 1,000 bpd.—under construction.
Wilshire Oil	Norwalk, Calif	Reformed petroleum		10,000 bpd. Platformer-Unifiner to be added at the refinery.
Wisconsin Oil Refining	Sheboygan, Wis	Refined petroleum		2,500 bpd. vacuum unit planned.
Witco Chemical	Eunice, N. M	Carbon black		Unit planned with 25 million lbs./yr. capacity. On stream early '56. (Initially will produce the semi-reinforcing type.)

• Plastics & Resins

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Allied Chemical & Dye (Barrett)	Toledo, Ohio	Polyester resins		Scheduled on stream by Summer '57. Expansion construction underway.
Allied Chemical & Dye (Barrett)	Toledo, Ohio	Phenolic resins		Expansion under construction. Scheduled for production by Fall '57.
Allied Chemical & Dye (Solvay)	Moundsville, W. Va.	Vinyl chloride		New plant on stream May '56.
Borden (Chem. Div.)	Fayetteville, N. C.	Formaldehyde, synthetic resins		Plant under construction. Due on stream by early '58.
Borden (Chem. Div.)	Illiopolis, Ill	Resin emulsions		Increase of 25% in capacity on stream June '56. Total capacity: 50,000 gal.
Borden (Chem. Div.)	Leominster, Mass	Polyvinyl chloride resins		12 million lb./yr. plant. Completed June '56. Adjacent to existing polyvinyl alcohol and acetate units.
Borg-Warner (Marbon Chemical Div.)	Washington, W. Va.	Plastics	$10,000,000	To build plant to produce high-impact thermo plastic resin dubbed "Cycolac."
Celanese	Gallipolis, W. Va.	Plasticisers, Intermediates	4,000,000	Plant construction completed April '56.
Chemical Process	Redwood, Calif	Adhesives		Facilities on stream Spring '56, for production of conventional protein glues (under Monsanto license) and phenol and urea adhesives by new company-developed process.
Coaden Petroleum	Big Spring, Tex	Styrene	3,000,000	Plant under construction.
Dow Chemical	Freeport, Tex	Polyethylene		25 million lb./yr. On stream late July '55.
Dow Chemical	Ironton, Ohio & Riverside, Mo.	Styrofoam		Completed Fall '56.
Dow Chemical	Pittsburgh, Calif	Styrene-butadiene latexes	1,000,000	Plant construction underway Jan. '56. Production by Fall '56 will go primarily to surface-coatings markets.
Dow Chemical	Torrance, Calif	Styrofoam		Plant in production Jan. '56.
Du Pont	Beaumont, Tex	Chloro-sulfonated polyethylene		Plant under construction. Due in Dec. '56.
Du Pont	Niagara Falls, N. Y.	Polyvinyl acetate	2,500,000	Expansion to supply need for vinyl acetate as an intermediary in production of polyvinyl alcohol. Also, expanding polyvinyl acetate emulsion facilities for paint making applications. Both due for completion late '56.



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To that man and his company Procon offers a world-wide construction organization which has proven—time and again—its ability to get the job done right up to the minute and right up to every specified requirement.

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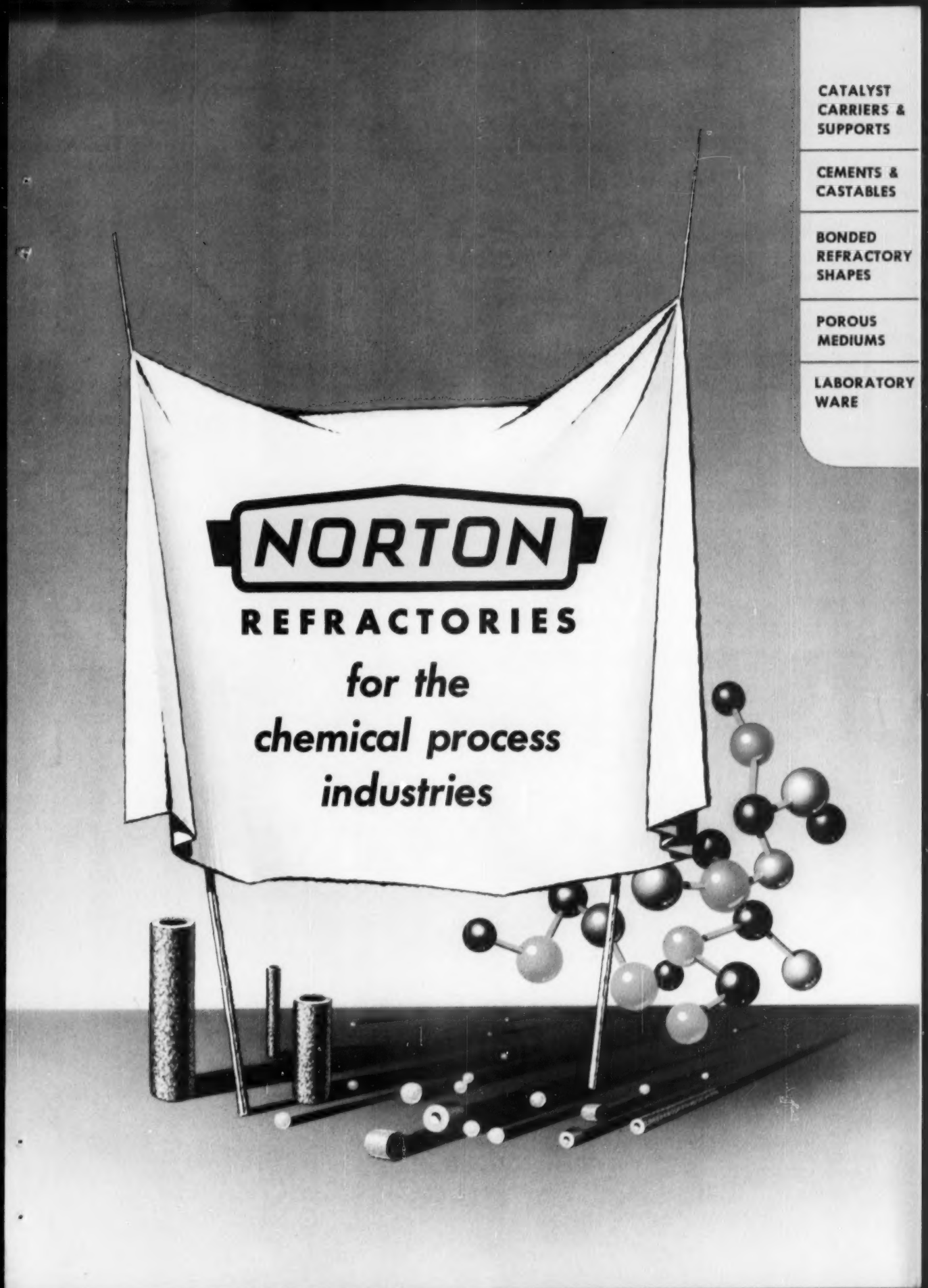
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WORLD-WIDE CONSTRUCTION FOR THE PETROLEUM, PETROCHEMICAL, AND CHEMICAL INDUSTRIES.

PLASTICS & RESINS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Du Pont	Orange, Tex	Polyethylene	4,500,000	Expansion to double production. Completion date set for early '58.
Du Pont	Parlin, N. J	Cronar-based film		Operations underway Oct. '55.
Durethene	Cicero, Ill	Polyethylene film		Under construction.
Eleanora Chemical	Passaic, N. J	Polyvinyl chloride		New plant on stream by late '56.
Escambia Bay Chemical	Pensacola, Fla	Polyvinyl chloride	Multi-million	Plant to be completed by late '56, will mark firm's entry into resin field. Capacity: 30 million lb/yr.
Escambia Bay Chemical	Pensacola, Fla	Vinyl	Multi-million	Planned.
Firestone Tire & Rubber	Orange, Tex	Styrene		75,000 ton/yr. plant planned, adjacent to butadiene facilities.
Foster Grant	Baton Rouge, La	Styrene		Plant expansion to 50 million lb./yr. completed.
Foster Grant	Leominster, Mass	Polystyrene	300,000	Expansion by 50% now completed.
General Tire & Rubber	Ashtabula, Ohio	Polyvinyl chloride resin	6,000,000	Plans to increase facilities by 50%.
Goodyear Tire & Rubber	Akron, Ohio	Chemigum and resins	3,500,000	Expansions to double capacity by Aug. '56.
Grace, W. R.	Baton Rouge, La	Polyethylene	18,000,000	Plant under construction. On stream early '57. Has license to use Phillips Petroleum low pressure poly process. 50 million lb./yr.
Grace, W. R. (Dewey & Almy)	Greenville, S. C	Cryovac plastic bags		Construction completed Sept. '55. To augment production at Lockport, New York and Cedar Rapids, Iowa.
Hercules Powder	Parlin, N. J	Polyethylene	10,000,000	New plant planned. 30 million lb./yr. capacity. Hercules has obtained Ziegler process license. Due Dec. '56.
Hercules Powder	Portland, Ore	Wet strength resins for paper-making		Plant completed and operating June '56.
Hooker Electrochemical (Durez Plastics)	Kenton, Ohio	Phenolic molding compounds	5,000,000	Plant on stream Fall-'55.
Insular Chemical	Long Island, N. Y	Polyvinyl chloride		On stream Spring '56.
Kellogg, M. W		Polyethylene		Unit planned.
Koppers & Brea Chemicals	Los Angeles, Calif	Polyethylene	10,000,000	Joint venture to turn out 60 million lb./yr. ultimately. Using Ziegler Process. Due complete mid '57.
Koppers	Port Arthur, Tex	Polyethylene		New plant under construction. Startup early '57. Capacity: 30 million lb./yr.
Koppers	Port Reading, N. J	Polyethylene		30 million lb./yr. low pressure linear-type polyethylene plant to start up early '57. To use raw material from Esso's ethylene recovery plant in Linden, N. J.
Marblette Corp	Long Island, N. Y	Phenolic & epoxy resins	$1,200,000	Capacity: 1 million lbs.—Due in Jan. '56.
Mobay Chemical	New Martinsville, W. Va.	Isocyanates		Plant on stream Feb. '56. 10-17 million lb./yr. unit. Soon plans to triple facilities.
Monsanto Chemical	Springfield, Mass	Vinyl chloride paste resins		To triple production facilities by mid-'56. Construction underway.
Monsanto Chemical	Texas City, Tex	Polyethylene	Multi-million	Plant on stream Aug. '55; to use new low-pressure process. Probably the Ziegler process. Expansion underway March '56. In operation by early '57. Additional capacity output increased 150%.
Napko Paint	Houston, Tex	Paints, other coatings, resins	500,000	Plant construction underway Aug. '55.
National Starch Products	Meredosia, Ill	Polyvinyl resin, vinyl acetate resin		Plant on stream Sept. '55. It is the firm's second plant of this type. Doubled capacity of plant in Jan. '56.
Nopco Chemical	Harrison, N. J	Urethane & vinyl foams	1,000,000	Two plants; producing capacity 2 million lbs. of both urethane & vinyl foams. On stream Oct. '55. Total capacity of this and Los Angeles plant totals 5.5 million of polyurethane and 2 million of foam components.
Nopco Chemical	Los Angeles, Calif	Urethane & vinyl foams	1,000,000	On stream by Oct. '55. 3 million lbs./yr. of both urethane & vinyl foams.
Nopco Chemical	Chicago, Ill. or Detroit, Mich.	Polyurethane & polyvinyl foams		Plant under construction. Third of its type for Nopco.
Nopco Chemical	Cedartown, Ga	Water soluble polymers & resin emulsions		Polymerization unit under construction; large scale production set.
Olin Mathieson Chemical	Olin, Ind	Cellophane		New Plant; 33 million lbs./yr. Due on stream Fall '57.
Phillips Chemical	Houston, Tex	Polyethylene		301,000 lb./day plant under construction.
Pine Chemicals	Trenton, N. J	Refined pine oleoresins		New plant. Uses automatically controlled continuous distillation refining technique.
Pittsburgh Consolidation Coal	Newark, N. J	Cresols, phenol, cresylic acids, resins, moulding compounds		New refinery for cresylic acid. Operations to begin Mid-'56. Contractor: Arthur G. McKee, Cleveland, Ohio.
Reichhold Chemicals	Ballardsville, Mass.; Detroit, Mich.; San Francisco, Calif.	Resins	10,000,000	Expansion of facilities underway.
Republic Steel (Cleveland Pressed Steel)	Magnolia, Ark	Plastic pipe		Expansion to double output by addition of new production units.


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CEMENTS & CASTABLES
BONDED REFRACTORY SHAPES
POROUS MEDIUMS
LABORATORY WARE
NORTON
REFRACTORIES
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ALUNDUM Catalyst Carriers

Typical applications:

Protective Atmospheres • Maleic Anhydride
Synthetic Gas Generation • Ethylene Oxide • Dehydrogenation
Desiccants • Catalytic Reforming • Nitric Acid Manufacture
Phthalic Anhydride • Dehydration

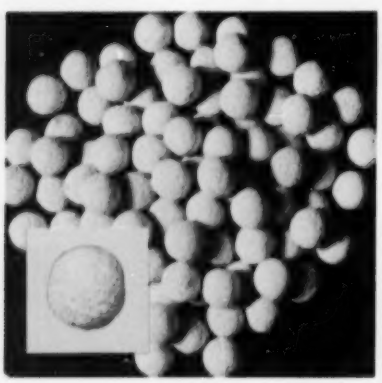
Norton ALUNDUM fused alumina catalyst carriers are characterized by excellent mechanical, thermal and chemical stability. They have high resistance to abrasion and erosion. Catalytically, they are crystalline in nature and are produced in two surface area types: low and intermediate. Intermediate surface area carriers are subdivided into types A, B and C, with varying characteristics.

TYPICAL CHEMICAL ANALYSES (%'s)

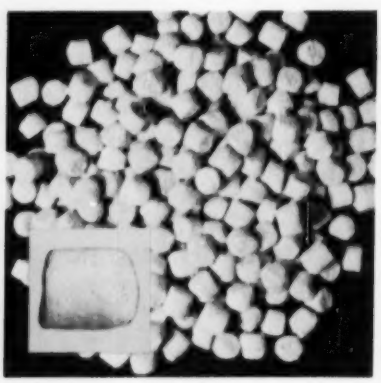
	LOW SURFACE AREA	INTERMEDIA SURFACE AREA
Al_2O_3	89.4-76.6	77.0
SiO_2	9.3-16.8	21.2
Fe_2O_3	0.5- 1.3	0.2
MgO	0.1- 0.6	0.4
CaO	0.1- 0.8	
Na_2O	0.3- 0.4	0.5
K_2O	0.1- 1.0	0.2
TiO_2	0.2- 2.5	0.5

PHYSICAL PROPERTIES

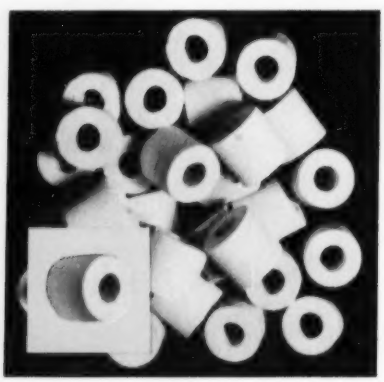
	Porosity	Water Absorption	Bulk Density	Vol. Bulk Density	Crystal Structure	Surface Area
Low Surface Area	40-50%	20-25%	1.90-2.10 gr/cc	65-80 lbs/ft³	Alpha Alumina	Less than 1m²/gram
Intermediate Surface Area Type A	50-55%	28-30%	1.65-1.70 gr/cc	58 lbs/ft³ (app)	Alpha, Gamma Alumina-chiefly Gamma	60-70m²/gram
Type B	50-55%	28-30%	1.65-1.70 gr/cc	60 lbs/ft³ (app)	Quartz, Alpha, Kappa, Delta Alumina-chiefly Quartz	20-30m²/gram
Type C	50-55%	28-30%	1.65-1.70 gr/cc	62 lbs/ft³ (app)	Alpha Alumina and Mullite	5-10m²/gram



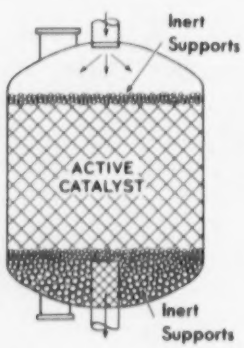
SPHERES



PELLETS



RINGS



Catalyst Supports

In Suspending Beds For Active Catalysts

In addition to the carriers described here, Norton produces catalyst supports for use in fixed bed convertors where it is necessary to suspend active catalysts at a given level. Made of dense, rugged, chemically inert material, these supports have great resistance to breakdown and have no chemically reactive effect on the processing.



New ALUNDUM 33-I insulating castable

Mixes and pours like concrete . . . protects to 3300°F

With ALUNDUM 33-I the ceiling of protection provided by insulating castables goes up to a new high of 3300°F. And not only does it permit higher operating temperatures — it is the most effective castable you can get for insulating at temperatures up to 3300°F. This new Norton refractory is *engineered and prescribed* for maximum protection and quick, easy installation in many types of furnaces and other high temperature equipment.

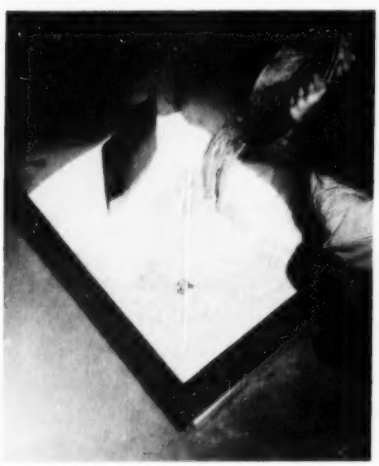
Characteristics of ALUNDUM 33-I

Density		100 lbs. per cu. ft.
Setting up time		
Stiffens		1 hr.
Initial set		4 hrs.
Final set		18-24 hrs.
Chemical Analysis	Al_2O_3	Primarily
	SiO_2	$< 0.1\%$
	Fe_2O_3	$< 0.1\%$
Maximum hot face temperature		3300°F
Water added per 100 lbs.		Approx. 4¼ gals.
Grain Size		6F

Easy To Install And To Store

ALUNDUM 33-I comes in dry form, in moisture-protective bags. It mixes readily, in about five minutes — you just add water according to instructions. The consistency of the mix is as workable as any cement mix, and can be easily poured into any prefabricated form.

ALUNDUM 33-I is . . .



Easy to Mix. Just add water according to instructions. Mixes thoroughly in about five minutes.

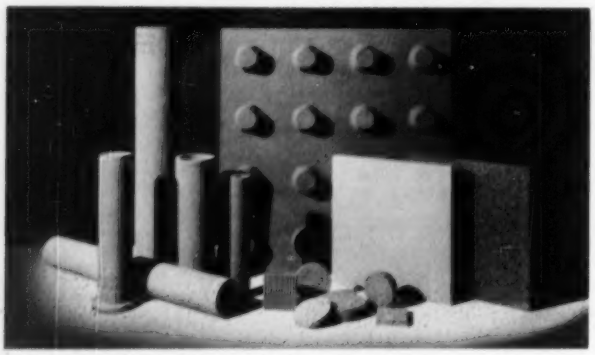


Easy to "Work". The consistency of the mix is as workable as any cement mix.

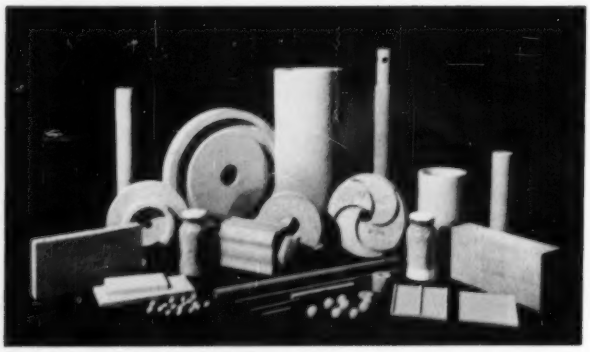


Easy to Pour. Flows readily into forms.

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PLASTICS & RESINS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
St. Regis Paper	.....	Plastics	500,000	Expansion. To increase production of injection-molded & vacuum-formed plastics.
Shawinigan Resins	Springfield, Mass.	Polyvinyl alcohol & polyvinyl chloride	1,000,000	Construction of new plant underway. Multi-million lb. capacity. Completion scheduled for late '56.
Shawinigan Resins	Trenton, N. J.	Butvar polyvinyl resin	.....	Expansion of facilities for base material completed. Further expansion set for late '56.
Shell Chemical	Houston, Tex.	Epoxy resins, bisphenol	.....	Resin unit on stream Spring '56.
Simpson Coal & Chemical	Natches, Miss.	Vinyl chloride	20,000,000	Still under consideration.
Sylvania Electric	Warren, Pa.	Plastics	.....	Plant planned Aug. '55.
Synthetic Products	Cleveland, Ohio	Vinyl stabilizers stearates & specialty products	.....	Expanding current capacity.
Tennessee Eastman	Kingsport, Tenn.	Polyethylene	.....	New coloring plant. In operation July '56.
Texas Eastman	Longview, Tex.	Tenite polyethylene	.....	Expansion to 40 million lbs./yr. Construction now underway, will be completed late '56.
Thompson Chemical	Hebronville, R. I.	Polyvinyl chloride resin	500,000	Plant construction underway. Completion set for Fall—'56. To use scientific designs suspension process of PVC resin manufacture.
Union Carbide (Bakelite)	Marietta, Ohio	Vinyl resin latex & styrene	.....	Production expansion on stream Jan. '56.
Union Carbide (Carbide & Carbon)	Niagara Falls, N. Y.	Vinyl esters	.....	Unit on stream early '56. Vinyl propionate, vinyl butyrate and vinyl 2-ethyl hexoate are available for first time in tank car quantities.
Union Carbide (Carbide & Carbon)	Seadrift, Tex.; Institute, W. Va.	Polyethylene	.....	55 million lbs./yr. combined. Units due by '57.
Union Carbide (Carbide & Carbon)	Texas City, Tex.	Vinyl acetate	Multi-million	Production capacity increased better than 100% by Fall '56.
Union Carbide (Carbide & Carbon)	Torrance, Calif.	Polyethylene	.....	Plant construction underway Oct. '55. Capacity: 60 million lb./yr.; completed mid '56.
U. S. Rubber	Baton Rouge, La.	Styrene	1,400,000	Plant under construction Jan. '56.

• Pulp & Paper

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Bergstrom Paper	Neenah, Wis.	Paper	$600,000	New finishing plant nearing completion.
Bowaters Southern	Rock Hill, S. C.	Newsprint	Multi-million	Permit granted by South Carolina water authority to build mill.
Bowaters Southern	Calhoun, Tenn.	Newsprint	.....	Mill expansion underway. Dec. start-up date. To boost output from 200,000 to 300,000 tons.
Brown Company	Berlin N. H.	Pulp-paper	17,000,000	Mill expansion underway.
Brown Company	Berlin, N. H.	Kraft pulp	3,500,000	Construction of bleachery underway. Operations on stream Fall '56.
Columbia Veneer	Everett, Wash.	Hardboard	500,000	75 ton/day plant on stream. Raw material cedar waste. Expansion to 100 tons/day on stream mid-'56.
Consolidated Water Power & Paper	Wisconsin River, Wis.	Semi-chemical pulp	.....	Expansion to 100 tons/day underway. Firm reports it has successfully used mixed hardwoods semi-chemical pulps for first time in making enamel printing paper grades.
Container Corp. of America	Brewton, Ala.	Bleached sulfate pulp and board	30,000,000	Construction of mill underway; to be completed by end of '57.
Continental Can	Midland, Mich.	Fibre shipping drums	.....	Plant on stream Dec. '55.
Coosa River Newsprint	Coosa Pines, Ala.	Newsprint, pulp	.....	Expansion underway; completion by early '58.
Crown Zellerbach	Antioch, Calif.	Paper	.....	Mill completed mid-'56, adjacent to multi-wall bag unit.
Crown Zellerbach	Antioch, Calif.	Multiwall bags	2,000,000	Plant completed mid-'56. Capacity: 54 million bags/yr.
Crown Zellerbach (Gaylord Container)	Bogalusa, La.	Paper	2,000,000	Expansion underway.
Crown Zellerbach	Camas, Wash.	Kraft paper	2,000,000	Mill construction underway; capacity 350 tons.
Crown Zellerbach	St. Helens, Ore.	Green veneer	750,000	Unit under construction. Marks firm's entry into plywood field in U. S.
Diamond Match	Red Bluff, Calif.	Wood pulp	.....	New mill planned.
Dierks Forest (Dierks Paper)	Pine Bluff, Ark.	Kraft liner board	15,000,000	Mill planned. In operation by Nov. '57. Capacity 150 tons/day.
Georgia-Pacific Paper	Toledo, Ore.	Kraft paper	.....	250 tons/day mill construction near completion.
Gulf States Paper	Demopolis, Ala.	Pulp	Multi-million	Pulp mill construction underway. Capacity: 300 tons/day. On stream Summer '56.
Hudson Pulp & Paper	Palatka, Fla.	Newsprint	25,000,000	Plans new mill adjoining present kraft paper mill. 100,000 tons/yr.
International Paper	Mobile, Ala.	Newsprint, kraft paper	20,000,000	Mill near completion; capacity 115,000 tons/yr. newsprint. To operate by Fall '56.
International Paper	Pine Bluff, Ark.	Newsprint, bleached kraft board	57,000,000	Mill construction underway May '56. To produce 130,000 tons/yr. Newsprint; 165,000 tons/yr. bleached kraft board. In operation late '57.

PULP & PAPER, continued

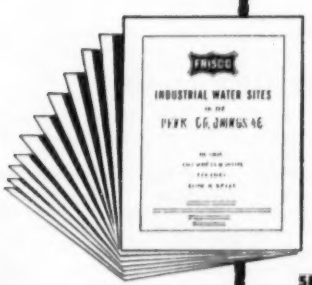
FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
International Paper	Spring Hill, La	Sulfate, pulp and paper	.....	15% expansion underway.
Johns-Manville	Natchez, Miss	Hardboard	.....	Plant under construction marks entry of J-M into this field.
Masonite	Laurel, Mass	Hardboard	14,000,000	Expansion of Plant.
National Container	Jacksonville, Fla	Paper	25,000,000	To double present 475 tons/day production at mill.
National Gypsum	New Orleans, La	Processed paper	Multi-million	Plant under construction.
National Gypsum	Shoals, Ind	Processed paper	Multi-million	New plant under construction.
Powell River	Southern U. S	Newsprint and woodpulp	.....	Mill under construction.
Pulpwood Development	Fulton, Tenn	Pulp & paper	35,000,000	Mill planned.
Scott Paper	Mobile, Ala	Paper	.....	Expansion of plant. Minimum of 120 tons additional bleached pulp per day.
Simpson Redwood Company of Calif.	Eureka, Calif	Woodpulp & foodboard	.....	300 ton pulp milled and foodboard plant. Planned.
Southland Paper Mill	Lufkin, Tex	Paper	15,000,000	Expansion by addition of a 3rd unit July '56. The new unit will enable Southland to produce an additional 70,000 tons of newsprint annually. A fourth unit will be completed by Jan. '59.
Thilmany Pulp & Paper	.....	Pulp	5,000,000	Expansion underway.
Valentine Pulp & Paper	Lockport, La	Paper	1,500,000	Expansion of plant; process uses whole sugar cane bagasse as raw material. Production increased from 50 to 75 tons/day.
W. Va. Pulp & Paper (Hinde & Dauch)	Eaton, Ohio	Corrugated boxes	2,500,000	New factory planned Dec. '55.
Weyerhaeuser Timber	Cosmopolis, Wash	Bleached sulfite pulp	20,000,000	Plant planned: 400 ton/day. Complete by '57. Magnesia process to be used.

• Rubber

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
American Synthetic Rubber	Louisville, Ky	Copolymers	.....	Increasing capacity by 50%. On stream by early '57. To bring output to 68,000 tons/yr.
Copolymer Rubber & Chemical	Baton Rouge, La	Synthetic rubber, butadiene	.....	30% expansion planned.
Firestone Tire & Rubber	Akron, Ohio	Synthetic rubber	.....	35% increase in production to 40,000 tons/yr. The Akron & Lake Charles facilities will now total 190,000 tons/yr. of synthetic rubber.
Firestone Tire & Rubber	Orange, Tex	Butadiene	$24,000,000	One unit under construction. Another 40,000-ton plant contract awarded to Catalytic Construction to be started soon.
General Tire & Rubber & El Paso Natural Gas	Odessa, Tex	Butadiene	.....	To add 40,000 long tons/yr. to synthetic rubber capacity with the nation's first postwar, privately-financed and completely integrated operation. On stream mid-'57.
Goodrich, B. F	Louisville, Ky	Rubber products	2,500,000	Expansion completed by Girdler in first quarter of '58.
Goodrich, B. F	Shelton, Conn	Polyurethanes	.....	Unit on stream Fall-'55.
Goodrich—Gulf Chemicals	Avon, Ohio	Synthetic rubber	.....	Elastomer on stream Oct. '55. 12 tons/day capacity.
Goodrich—Gulf Chemicals	Port Neches, Tex	Latex	.....	Expansion and diversifications of synthetic rubber plant. Initial production: 1 million lbs./mo. and then to triple this capacity soon. Capacity 18,000 tons/yr. at present.
Goodyear Tire & Rubber	Houston, Tex	Synthetic rubber	6,000,000	In first stage of expansion, production increased to 170,000 tons/yr. Completed by early '57. Second stage, to increase plant to over 200,000 tons, will be undertaken later.
Goodyear Tire & Rubber	Jackson, Mich	Rubber tires	4,500,000	Expansion almost completed.
Humble Oil	Baytown, Tex	Butadiene	.....	Capacity increased by one third from 49,000 to 65,000 tons/yr. Construction underway June '56. Completion set for early '57.
Neches Butane Products	Port Neches, Tex	Butadiene	20,000,000	New 200,000 ton/yr. unit to be ready early '58.
Petroleum Chemicals	Lake Charles, La	Butadiene	4,300,000	Expansion underway to up capacity from 63,000 to 79,000 tons/yr. To be completed late in '56.
Petro-Tex Chemical	Houston, Tex	Butadiene	.....	Expansion underway Oct. '55. Plans to boost production by 50% (New capacity: 135,000 tons/yr.). Operations scheduled late '56.
Phillips Chemical	Borger, Tex	Butadiene	.....	Capacity to be hiked by 25,000 short tons/yr. Thus raising synthetic rubber capacity some 30,000 long tons/yr. Underway Oct. '55. Completed by early '57.
Phillips Chemical	Borger, Tex	Copolymer	.....	15% expansion of facilities due on stream '56. A second expansion of 22%. Increase in plant facilities to be completed by early '57.

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RUBBER, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Shell Chemical	Torrance, Calif.	Latex	.....	Expansion of facilities for production of cold high-solids latex. Reportedly produced for first time West of Rockies. (60% solids, 40% conventional latex.) On stream May '56. Plant itself on stream Oct. '56.
Texas Butadiene & Chemical	Houston, Tex.	Butadiene, alkylates	$26,000,000	Capacity: 2.5 million bbls./yr. Avgas; Max. 43,000 tons/yr. Min. 17,000 tons/yr. butadiene. New installation is a Houdry unit to use Houdry dehydration process. Constructed by Fluor Corp. Production scheduled early '57.
Texas—U. S. Chemicals	Port Neches, Tex.	Synthetic rubber	.....	Expanding capacity from 275 to 350 million lbs./yr. On stream Fall '56.
United Rubber & Chemical	Baytown, Tex.	Synthetic rubber	Multi-million	Expansion planned.
U. S. Rubber (Naugatuck Chemical)	Baton Rouge, La.	Paracril, Kralastic-rubber and plastic molding	$5,000,000	A 50% increase in current capacity due for completion by July '57. Construction to start late in '56. On stream date Jan. '58.
U. S. Rubber	Gastonia, N. C.	Latex	.....	New plant on stream mid-Sept. 55. Increases compounded rubber capacity by 20%.
U. S. Rubber	Naugatuck, Conn.	Synthetic rubber	.....	Expansion of existing plant. Production to be increased by 40%. Started May '56. Completion due in '58.

• Textile Fibers

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Allied Chemical & Dye	Chesterfield, Va.	Nylon	.....	Unit on stream Jan. '56. Makes Allied third largest after Du Pont and Chemstrand. 20 million tons/yr.
American Cyanamid	Milton, Fla.	Creslan (acrylic fiber)	.....	Plant construction to begin Dec. '56. Capacity set at 27 million lb./yr.
American Cyanamid	Fortier, La.	Acrylonitrile	.....	A 100%, 5 million lb. expansion underway to be completed by '58.
American Enka	Morristown, Tenn.	Rayon staple fiber	$21,000,000	50 million lb/yr. Unit due in late '56. Adjacent to firm's present Lowland, Tenn., facilities.
American Viscose	Front Royal, Va. & Parkersburg, W. Va.	Rayon staple fiber	.....	20% plant expansion by 90 million lb./yr. In operation mid-'56.
Celanese	Rome, Ga.	Fortisan—36 fiber	.....	Plant on stream Dec. '55.
Chemstrand	Pensacola, Fla.	Nylon	.....	Expansion to 88 million bls/yr. from 50 million. On stream early '56.
Courtauld's (Ala.) Inc.	Alabama	Rayon staple fiber	.....	Expansion to boost capacity by 100 million bbl/yr. Total capacity now at 150 million.
Dow Chemical	James River, Va.	Zefran (staple fiber)	$15,000,000	Plant construction underway Fall '56. Capacity set at 12-14 million lb./yr.
Du Pont	Richmond, Va.	Nylon	.....	Plant under consideration.
Du Pont	Waynesboro, Va.	Orlon acrylic fiber	.....	Plant under consideration.
Ferro Corp.	Nashville, Tenn.	Fiber-glass	$1,500,000	Doubled capacity. First completely integrated plant in U. S.
Ferro Corp.	So. Calif.	Fiber-glass	.....	New unit planned.
Libbey-Owens—Ford Glass (Corrulux Div.)	Houston, Tex.	Glass fiber reinforced plastics	$250,000	Expansion program; new total capacity of 20 million square feet of panels/yr.
Nytef Plastics	Plainfield N. J.	Extruded nylon	.....	New plant on stream July '55. Replaces old one destroyed by fire in Kenilworth, N. J.
Owens-Corning Fiberglas	Camden, N. J.	Fiberglas	.....	New plant planned. Production by Fall '56.
Tennessee Eastman	Kingsport, Tenn.	Verel (modified acrylic fiber)	.....	Plant under construction. Ready by late '56.
Union Carbide (Carbide & Carbon)	South Charleston, W. Va.	Dynel (synthetic fibers)	.....	Expansion by 35%. Completed Feb. '56.

• Miscellaneous

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
A. C. Lawrence	So. Paris, Me.	Leather	$2,500,000	New tannery opened early '56.
Atomic Energy Commission	Portsmouth, Ohio	Atomic energy	$800,000,000	New gaseous diffusion plant on stream May '56.
Babcock & Wilcox	Lynchburg, Va.	Nuclear reactor fuel elements	.....	Plant on stream Spring '56. Will turn out at least 325 fuel-element assemblies.
Combustion Engineering	Windsor, Conn.	Atomic fuel elements, reactor cores	$5,000,000	Facilities to be built by Stone & Webster.
Conn. Chemical Research	West Coast	Aerosols	.....	New facilities planned.

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Dow Chemical	Rocky Flats, Colo.	Nuclear energy	$13,500,000	Expansion of AEC plant by '57. Work by Catalytic Construction.
Du Pont	Maysville, Ky.			Expansion planned.
Interchemical	Cincinnati, Ohio	Printing inks	$2,000,000	On stream by Nov. '56.
National Lead		Processed nuclear fuels		Plans to build a plant to purify and recover uranium, plutonium and other radioactive products from partially used nuclear fuels.
Penna. Power & Light		Atomic energy		Atomic-electric power plant of at least 150,000 kw. planned. Homogeneous-type reactor.
Pfizer	Terre Haute, Ind.	Animal feed supplements		Expansion to double production capacity. Construction begun Feb. '56. Completed June '56.
Procter & Gamble	Iowa City, Iowa	Specialty products		Due in Fall '56.
Reichhold Chemicals	Kansas City, Kans.			New plant on stream.
Texize Chemicals	Maudlin, S. C.	Industrial & household chemicals		Expansion of facilities (2 additional buildings) planned.

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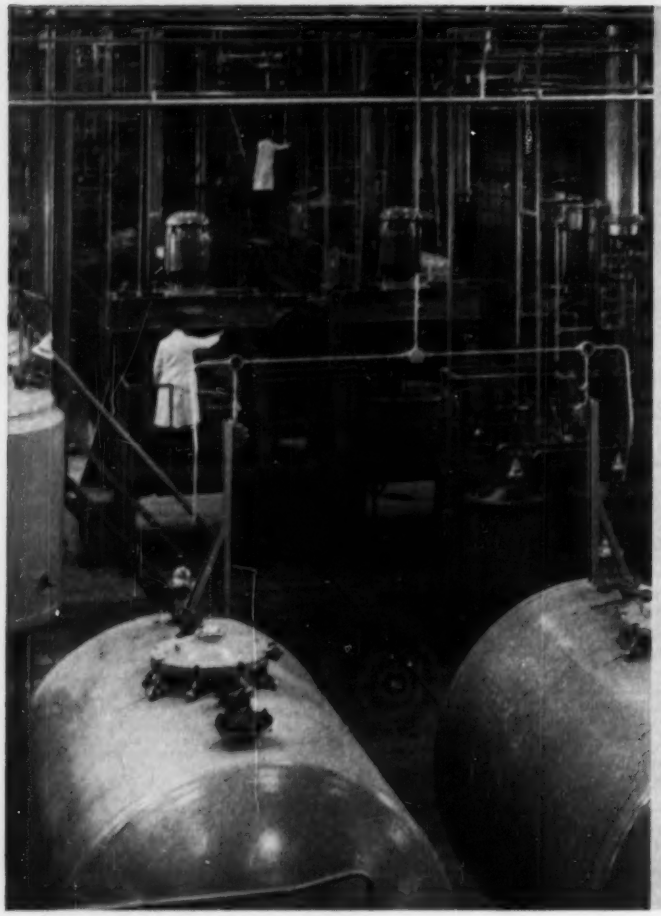
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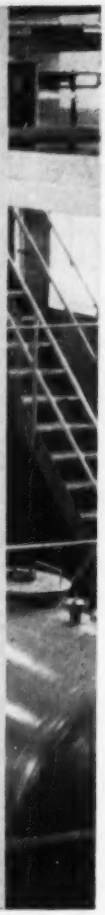
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Specialists in Corrosioneering

1956 INVENTORY

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336 PROJECTS . . . CE's unparalleled facts-packed roundup of key new processes and technology . . . who's doing what and how . . . a sweeping bird's-eye view of the chemical process industries designed for fast reference.

HERE'S your guide to the newest frontiers of the chemical process industries, pioneered during the past two-year period ending July 1956. 336 major advances in processes and technology have been named to this seventh CE annual inventory, each carefully screened to insure that only the truly significant are listed. Tightly digested notes of the very essential facts point the way to more extensive information, put you right on top of the latest developments.

1956

New Processes and Technology

INVENTORY

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• Fats & Oils

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Epoxy compounds...	In-situ epoxidation	Becco Chemical Div., Food Machinery & Chemical Corp. Buffalo, N. Y.	Controlled molar ratio of acetic acid to H_2O_2 in presence of mineral acid catalyst and elevated temperatures converts fats and oils to epoxy derivatives.	Pilot-plant scale.
Epoxy compounds...	Peroxide-ion exchange	E. I. du Pont de Nemours & Co. Wilmington, Del.	Process, still experimental, epoxidizes unsaturated fats and oils with hydrogen peroxide in presence of an acidic ion exchange resin. Older processes used sulfuric acid catalyst. Becco Chemical Div. has a similar process.	New process gives high yield in one step with essentially no byproduct formation. If commercially successful, process will make resin plasticizers and stabilizers, also intermediates for coatings, lubricants, insecticides.
Fatty acids.....	One-step purification	John E. Schulze Div., Bell & Gossett Co. Chicago, Ill.; West Virginia Pulp & Paper Co. Charleston, S. C.	Process claimed to cut investment cost by one-third, operating cost by 50%, compared with usual fatty acid purifications. Needs only one tower, operating as dry high-vacuum fractionator.	Process operating several years at 30 tpd. in Schulze plant. Usable on tall oil and crude fatty acids. West Virginia to use on 50 tpd. tall oil. Process offered by Bell & Gossett.
Fatty acids, dibasic..	Nitric acid oxidation	.....	Utilizes tallow and saturated fatty acids to yield dibasic fatty acids by oxidation with 5–25% aqueous nitric acid. Following oxidation, monobasic acids are removed by steam distillation.	Process developed by Stanford Research Institute. If and when commercialized, process may open important new outlets for tallows and greases.
Fatty alcohols.....	Catalytic hydrogenation	.....	Without saponification or esterification, fatty acids are hydrogenated directly under high pressure with a dissolved copper-salt catalyst. Process claimed to lose no glycerine, produce no byproducts, make C_8 to C_{20} alcohols.	Batch process, probably suitable for continuous operation, developed by Givaudan-Delawanna, N. Y., offered for license by H. L. Barneby, Columbus, Ohio.
Fatty alcohols.....	Continuous hydrogenation	.....	Belgian SBA process involves steam hydrolysis of animal or vegetable fat to fatty acids and glycerine, pressure esterification with methanol, catalytic hydrogenation at 400–500 atm., 390–660 F., with methanol recovery, final vacuum distillation to separate.	Process being offered in U. S. by Blaw-Knox. Claim overall fatty acid yield of 92%.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Fatty alcohols.....	Continuous hydrogenation	Sinnova..... Toulouse, France	Fatty acids, hydrogen and a nickel-chrome catalyst react in a high-pressure tower type reactor. Products are fractionated, catalyst recirculated. Simpler than usual processes.	Process developed by Societe d'Innovations Chemique (Sinnova) in France, and used there for 10 yr. Now offered in U. S. by Rust Engineering, Pittsburgh.

• Fertilizers & Fertilizer Chemicals

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Ammonia synthesis gas	Coke-oven gas separation	U. S. Steel Corp., Geneva, Utah Ketona Chemical Co., Ketona, Ala.	After normal treatment for recovery of byproducts, stripped oven gas is used as hydrogen source. Ketona uses low-temperature process; probably similar process for U. S. Steel. Nitrogen from air separation.	Coke-oven gas hydrogen source has been used in Europe. Blaw-Knox designed U. S. S. plant for 200 tpd. ammonia. Singmaster & Breyer designed Ketona plant for 120 tpd., now in operation.
Ammonia synthesis gas	Conversion from coke to natural gas	Tennessee Valley Authority Wilson Dam, Ala.	Existing plant for making ammonia from coke successfully converted to use natural gas as raw material.	Changeover complete.
Ammonia synthesis gas	Hot K_2CO_3 absorption	Escambia Bay Chemical Corp. Pensacola, Fla.	Carbon dioxide is removed from synthesis gas by absorption in 40% K_2CO_3 at 200 F. and 300 psi. Steam consumption cut substantially over monoethanolamine absorption.	New ammonia plant is first commercial use of technique developed by U. S. Bureau of Mines primarily for Fischer-Tropsch synthesis.
Ammonia synthesis gas	Partial oxidation of coal	Olin Mathieson Chemical Corp. Morgantown, W. Va.	Synthesis gas for either methanol or ammonia is produced by partial oxidation of coal. Oxygen converts the coal to carbon monoxide and hydrogen. Texaco process.	Intended to provide data, experimental unit will produce 80 tons of ammonia per day.
Ammonia synthesis gas	Partial oxidation of oil	Northern Chemical Industries Searsport, Me.	First to use exclusively Bunker C fuel oil charge with Texaco-Hydrocarbon Research partial oxidation process.	Plant in operation.
Ammonium nitrate...	Ammonia oxidation and reaction	Aburdarverksmidjan H. F. Reykjavik, Iceland	Ammonia synthesized from electrolytic hydrogen, nitrogen from air fractionation, using hydro power. Synthesis operates at 5,150 psi. Part of 30 tpd. NH_3 output is oxidized to HNO_3. Two-stage crystallization reaction converts NH_3 and acid to nitrate, using reaction heat to evaporate all water produced.	Plant in operation.
Ammonium nitrate...	Prilling.....	Commercial Solvents Co. Sterlington, La.	Molten ammonium nitrate is sprayed, instead of the usual 95% solution, into the top of prilling tower. No drying is needed, material requires less than half the free fall for uniformly spherical prills.	In pilot plant stage. Licensing will be handled by Chemical & Industrial Corp.
Ammonium sulfate, phosphate	Controlled acidulation	Northwest Nitro Chemical Ltd. Medicine Hat, Alberta	Ground phosphate rock is digested in a single reactor instead of the usual eleven reactors employed by older methods.	Plant designed and built by Fluor is due on stream in Oct. 1956.
b-Conidendrol.....	Demethylation.....	Crown-Zellerbach Corp.... Camas, Wash.	Conidendrin is extracted from Western hemlock waste sulfite liquor using trichlorethylene. Reaction with pyridenehydrochloride produces demethylated isomeric derivative.	Market research study underway.
Calcium metaphosphate, soluble	Hydrolysis.....	Central Farmers Fertilizer Co. Georgetown Canyon, Ida.	Normal water-insoluble metaphosphate can be solublized for enriching superphosphate or mixed fertilizers by hydrolysis with H_2SO_4 and water in presence of fertilizer to be enriched.	Developed by Illinois Farm Supply Co., Chicago. Calcium metaphosphate is cheapest and most concentrated form of phosphorus except the elemental material.
Diammonium phosphate	Controlled acidulation	Missouri Farmers Assn. Joplin, Mo.	Wet-process H_3PO_4 of 32% P_2O_5 content is ammoniated in two stages in a series of three agitated tanks. Slurry of 20-80 mixture of mono- and diammonium phosphates with 20% water contains any impurities from acid.	Process developed by Dorr-Oliver uses cheap wet-process acid without trouble from iron and aluminum impurities, avoids filtration and crystallization in new $5-million plant.
Diammonium phosphate	From coke-oven gas.	Colorado Fuel & Iron Corp. Pueblo, Colo.	NH_3 in coke oven gas is removed by scrubbing with electric furnace phosphoric, rather than usual H_2SO_4. Produces fertilizer-grade DAP. Koppers and Monsanto collaborated on process.	Process known before but previously unused because electric furnace phosphoric was too expensive. Wet process acid previously gave trouble with iron and aluminum hydroxide precipitates.
Diammonium phosphate	Vacuum crystallization	Tennessee Valley Authority Wilson Dam, Ala.	24% P_2O_5 wet process phosphoric is reacted with NH_3 so as to precipitate metallic impurities. These are filtered out and filtrate gets more NH_3 in a vacuum crystallizer. Crystal slurry is centrifuged, metallic phosphates added, and dried.	Pilot plant work completed.

FERTILIZER & FERTILIZER CHEMICALS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Diammonium phosphate	Vacuum evaporation	Shell Chemical Co. Pittsburg, Calif.	Phosphoric acid and ammonia are mixed in a crystallizer-evaporator. Exothermic reaction supplies heat for vacuum evaporation. Resulting crystals are centrifuged, dried and packaged.	A 5,000 ton/year plant is scheduled to be built at the same site as Shell's ammonia sulfate facility.
Fertilizer, mixed.....	Ammoniation-granulation	E. Rauh & Sons Fertilizer Co. Indianapolis, Ind.	Produces homogeneous, granular, free-flowing fertilizers with wide range of compositions. Storage curing is not required. Particle size can be controlled.	Licensed by Link-Belt Co., developed by S. J. Martinet of Rauh.
Fertilizer, mixed.....	Ammoniation-granulation	Super-Crop Plant Foods Ottumwa, Iowa	Mixed fertilizer solids (superphosphate, potash) enter a rotary drum where sulfuric acid and ammoniating solution also enter through nozzles. Formation of $(NH_4)_2SO_4$ in place contributes 4,000 Btu. to drying needs for each 1 lb acid. Drying and granulating aided by extra heat from an oil burner.	Low cost mixing-ammoniating-granulating process developed by Fertilizer Eng. & Equipment Co., Green Bay, Wis. Similar process offered by D. M. Weatherly Co., Atlanta.
Fertilizer, nitrophosphate	Controlled acidulation	.....	Process makes nonhygroscopic fertilizer by nitric acidulation of phosphate rock, using KCl to remove fluorine, NH_3 to neutralize and precipitate product.	Developed and offered by Cannac Research & Development Corp., N. Y. Cannac is building its own plant.
Fertilizers, liquid....	Automatic.....	Agriform Co. Woodland, Calif.	Almost completely automatic process; plant turns out 200 tons/day liquid fertilizers under care of single operator. Products include ammonium nitrate solution, ammonium phosphate, aqua ammonia. Part of process is continuous, other sections batch.	On stream commercially. Plant cost $100,000.
meta-Xylene diamine.	Hydrogenation of nitrile	Oronite Chemical Co. San Francisco, Calif.	Isophthalic acid is reacted with ammonia. Resulting nitrile is hydrogenated to form aromatic diamine with essentially aliphatic reaction characteristics.	Market research study underway.
Superphosphate, concentrated	From low-grade rock	International Minerals & Chemical Corp. Bartow, Fla.	Low-grade rock is digested with sulfuric acid. Resulting gypsum filtered out. Weak phosphoric acid is concentrated, reacted with high-grade rock.	A $4-million expansion program is completed.
Tricalcium phosphate	Neutral defluorination	.....	Ground phosphate rock is beneficiated, treated with phosphoric acid and defluorinated in water atmosphere to yield tricalcium phosphate low in fluorine.	Developed by Bureau of Mines, process is still in lab stage.

• Fine Organics

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Acetylene products..	High-pressure acetylation	General Aniline & Film Corp. Calvert City, Ky.	Process produces a wide variety of acetylene products, such as propargyl alcohol, vinyl pyrrolidone, butynediol. Vinyl ether and ester are also planned.	First full commercial plant on stream.
Acrylamide.....	Ion exclusion.....	.....	Acrylonitrile, water and sulfuric acid are reacted to form acrylamide, acrylic acid, ammonium bisulfate and sulfuric acid. This mixture is fed to cation-exchange resin bed.	Patent issued to Dow.
Algae animal feed...	Continuous.....	.....	Process is ten times faster than previously reported algae cultivation methods. Product could compete with present poultry feed supplements.	Developed by Basic Research Corp. Still in laboratory stage.
Aromatic acids.....	Coal oxidation.....	Dow Chemical Co. Midland, Mich.	Pulverized bituminous coal, suspended in NaOH solution, is treated with oxygen at 270 C. and 900 psi. Product is mixture of aromatic acids.	Dow research is aimed at procedures for fractionation of product mix.
Aromatic monobasic acids	Catalytic oxidation.	Shell Chemical Corp. Martinez, Calif.	Process yields tertiary-substituted benzoic acids, such as para-tertiarybutylbenzoic acid, by air oxidation with cobalt catalyst. For example, tertiarybutyl toluene blown with air at 175 C. and 50-75 psi. yields PTBBA in 2-4 hr.	Shell exploring market for PTBBA and other tertiary substituted benzoic acids. Plant is operating.
Butylamine, tertiary.	.....	Monsanto Chemical Co. Texas City, Tex.	Raw materials are HCN and isobutylene. Process details unavailable. Product intended for emulsifiers, film-forming agents, aliphatic amines.	
Caprolactam.....	From cyclohexanone	Allied Chemical & Dye Corp. Hopewell, Va.	Cyclohexanone, made from phenol, reacts with hydroxylamine to get caprolactam.	In commercial operation. Product goes to make nylon-6.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
alpha-Chloroethyl benzene	Catalytic hydrochlorination	Dow Chemical Co. Midland, Mich.	Use of packed column to hydrochlorinate styrene shown better than batch process in laboratory. Considerable savings in HCl; increases hydrochlorination rate up to 6-fold; less polymerization. Methanol and copper are reported to be best catalysts.	Full-scale unit has been designed.
Citric and aconitic acid esters	Continuous esterification	.....	Conversions better than 99% in contact times of 2 to 3 min.	Small-scale testing of process developed by Brooklyn Poly.
Detergent, nonionic..	From sugar.....	.....	Sucrose is reacted with ester of a fatty acid to give a sucrose monoester. It is an effective detergent, nontoxic, odorless and tasteless, a free-flowing powder or flake.	Developed by Foster D. Snell laboratories.
Dibasic acids.....	From cyclopentadiene	.....	Sodium derivative of cyclopentadiene reacts with carbon dioxide to form dicarboxylic acid. Cracking cyclopentadiene dimer gives methylcyclopentadiene which reacts with sodium to form dibasic acids.	Under study at Esso Research.
Dimethyl sulfoxide...	Catalytic oxidation.	Stepan Chemical Co. Chicago, Ill.	Catalytic reaction of methanol and H_2S at 500 F. forms dimethyl sulfide which is condensed, purified by distillation, then oxidized at 120 F. with air using NO_2 as a catalyst. Water-white 99.9% product is recovered by vacuum distillation.	Product is a solvent for many gases, including acetylene, with selective solvent action on aromatics, unsaturates, sulfur compounds.
Esters.....	Continuous esterification	.....	Acid, alcohol and catalyst recirculate through a coil of monel tubing (0.055-in. dia., 18 ft. long) until desired conversion is achieved.	Developed by R. C. Canapary of Esso Research & Eng. Co. and P. F. Bruins, Brooklyn Poly.
Hecogenin.....	Extraction.....	East African Sisal Estates, Ltd. Ruiru, Kenya	By removing fibers from the long, spiky leaves of sisal plant, steroid sapogenin is recovered in appreciable quantities. Hecogenin is a cortisone precursor.	In pilot-plant stage.
Isosebacic acid.....	Butadiene dimerization	U. S. Industrial Chemicals Co. Tuscola, Ill.	Series of reactions starting with butadiene (dimerization, carbonation, hydrogenation, acidification) produce sebacic acid as well as ethyl suberic, diethyladipic acids.	On stream with $10-million plant.
Itaconic acid.....	Fermentation.....	Chas. Pfizer & Co. Brooklyn, N. Y.	Molasses plus nutrients are fermented with *Aspergillus terreus* in agitated air-blown deep fermentor. Broth filtrate is evaporated, crystallized, carbon treated, refiltered and recrystallized.	Plant operating; uses in resins, plastics, fibers, plasticizers, and lube oil additives are being explored.
Lignosulfonates.....	Continuous anion exchange	Rayonier, Inc. Shelton, Wash.	Steam-stripping and adsorption on tertiary amino anion exchange resin process is run continuously as part of complete pulping cycle. Process recovers about 20% of total lignosulfonates.	In pilot-plant stage, development batches are being used for test marketing to determine which fraction will find ready markets.
Lysergic acid.....	Synthetic.....	Eli Lilly & Co. Indianapolis, Ind.	Process starts with indole propionic acid, goes through 14 reactions.	Demonstrated in laboratory.
Methyl glucoside....	Continuous.....	Corn Products Refining Co. Argo, Ill.	By putting production on a continuous basis methyl glucoside is now available in industrial quantities. Catalyst can be recovered and product is of higher quality.	Large pilot-plant scale production.
Methyl mercaptan...	Hydrosulfuriation..	Union Oil Co. of Calif. Brea, Calif.	Reaction at 70 C. and 175 psig. of methyl chloride with sodium hydrosulfide in excess H_2S gives 87 mole % of methyl mercaptan per pass.	Pilot unit so far.
Monosodium glutamate	Acid hydrolysis....	Great Western Sugar Co. Johnstown, Colo.	Barium hydroxide is used to precipitate sugar from beet molasses. Discarded filtrate is hydrolyzed by sulfuric acid to give MSG.	Operation of $2.5 million plant since late 1955 is expected to produce 3.5 million lb./yr.
Nitroparaffins and derivatives	Vapor-phase nitration	Commercial Solvents Corp. Sterlington, La.	Vapor-phase nitration of propane at 750–850 F. by nitric acid produces principally nitromethane, nitroethane, 1- and 2-nitropropane. Adiabatic multiple-acid-spray nitrator is used.	Commercial plant cost $5-million and will produce up to 10 million lb./yr.
Oxygenated hydrocarbons	Air oxidation.....	University of Texas Austin, Tex.	Maximum yield conditions determined for the vapor phase air oxidation of cyclohexane with and without metal catalysts.	Laboratory process only.
Peracetic acid.....	Acetaldehyde oxidation	Carbide & Carbon Chemical Co. S. Charleston, W. Va.	Oxidation of acetaldehyde is stopped before it goes all the way to acetic acid. Peracetic acid may be reacted with different olefins to make various epoxy chemicals.	Plant to produce up to 50 million lb./yr.

FINE ORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Rhodinol	Photochemical	Shulton, Inc. Clifton, N. J.	Citronellol, out of presence of air, is isomerised by exposure to ultraviolet light at 235 C. for 12–24 hr. Product is recovered by fractionation.	Process is simple, has much higher yield (65–80%) than previous synthetic processes. In commercial operation.
Riboflavin, soluble	Fractional crystallization	Hoffmann La Roche, Inc. Nutley, N. J.	New process reacts USP riboflavin with dichlorophosphoric acid and diethanolamine. Successive fractional crystallizations produce pure DEA salt which is converted to Na salt, then dried.	Twice as costly as USP ribo, but advantages of unaided solubility offset added expense.
Sparine promazine	Dehalogenation	Wyeth Laboratories	By dehalogenating chlorpromazine, process produces a tranquiliser that bypasses bad side effects of chlorpromazine.	Cleared by FDA, product is ready for commercial production.
Tetracycline	Direct fermentation.	American Cyanamid	Direct fermentation is considered mainly as an alternative to present route of chemically converting chlorotetracycline obtained by fermentation.	Patent issued to Cyanamid, cross-licensing arrangement with Pfizer.
Tetrahydrofurfuryl alcohol	Low-pressure catalytic hydrogenation	Quaker Oats Co. Memphis, Tenn.	Details undisclosed.	Started commercial production.
Thiophene	Synthesis	Index Chemicals Co. Houston, Tex.	Vaporized sulfur and butane are reacted noncatalytically in straight pipe, thiophene thiol is dropped out when quenched with water. Condensing and stabilizing remove H_2S and light hydrocarbons. Batch distilling yields 98% thiophene after debutanization.	Process developed by Socony Mobil. Plant has capacity of 500,000 lb./yr.
Vanillin	Lignin oxidation	Ontario Paper Co. Thorold, Ont.	Lignin-containing sulfite liquor is oxidized in presence of lime, with 6–8% yield. Compared with usual alkaline oxidation (NaOH), no recovery of lime is needed.	Process operates on effluent from company's sulfite-liquor-to-alcohol plant. Product recovered by continuous countercurrent extraction with toluene.
Vitamin A	Synthetic	Eastman Kodak Co. Rochester, N. Y.	New synthesis route can produce single, unmixed stereoisomers of vitamin A, eliminating costly separation steps.	Process still in laboratory stage.
Vitamin A palmitate	Equilibrium isomerization	Chas. Pfizer Co. Brooklyn, N. Y.	By deliberately converting a portion of the all-trans isomer to cis in an equilibrium mixture, biological activity is not lost easily.	Commercial stage.

• Heavy Organics

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Acetaldehyde	Catalytic	Montecatini Co. Novara, Italy	Process converts acetylene catalytically to acetaldehyde by reaction with water. Novel feature is that CO_2 need not be removed from acetylene made by partial oxidation of natural gas.	Need for pure acetylene for sale has required producer to add purification step.
Adipic acid	Nitric acid oxidation	Du Pont Belle, W. Va.	Nitric acid oxidation replaces batch air oxidation commonly used. Nitric acid makes it possible to go directly to adipic acid from cyclohexane. Air oxidation is still used in conjunction with nitric acid.	On commercial stream.
Adipic acid	NO_2 oxidation	.....	Nitrogen dioxide is used to oxidize cyclohexane directly to adipic acid. Yield at 50 C. is 98% after 43 hr.	Laboratory development of University of Texas, Austin, Tex.
Aluminum trimethyl	Reduction, high-vacuum distillation	Rocky Mountain Research, Inc. Denver, Colo.	Process involves reduction of aluminum with a methyl radical carrier (likely a a halide), disproportionation of complex intermediates and high vacuum distillation of resulting ATM. Sequence is carried out under anhydrous conditions.	Announced commercial production due for use as a high energy fuel, Ziegler-type polymerization catalyst.
Aniline	Catalytic hydrogenation	American Cyanamid Willow Island, W. Va.	Plant will use a fluid-bed reactor and a new catalyst to reduce nitrobenzene to aniline.	Design work completed, plant will have capacity of 24 million lb./yr.
Aniline	Catalytic hydrogenation	National Aniline Moundsville, W. Va.	Catalytic vapor-phase hydrogenation of nitrobenzene to aniline, key to process is nickel sulfide and amorphous alumina catalyst.	In commercial operation.
Benzene	Beta-ray bombardment of acetylene	General Electric Co.	At 26 C. about 5 molecules of benzene are produced per 100 e.v. Cuprene is byproduct.	Very preliminary work.
Benzene	Catalytic reforming.	Atlantic Refining Co. Philadelphia, Pa.	Have developed conditions for maximum production of benzene from cyclohexane and methylcyclopentane over Cat-forming catalyst.	Pilot plant operation.

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PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Cane sugar	Continuous diffusion	Fellsmere Sugar Producers Assn.	Although diffusion is standard method for extracting sugar from beets, cane sugar has depended on crushing of cane. New process, tried out in 150 tpd. (of cane) mill, shows higher recovery, higher purity. Extraction of cane chips is countercurrent by hot water in agitated tower.	Process developed by National Cylinder Gas Co., Chicago, is offered in sizes from 150 to 1,500 tpd. cane, with 97% recovery guarantee, expectation of 99% recovery.
Cane sugar	Electromembrane purification	Hawaiian Commercial & Sugar Co. Maui, T. H.	Cane juice is desalted with electrolytic ion exchange membranes. Salt removal increases sugar recovery.	In pilot-plant stage. Use Ionics membranes.
Cane sugar	Ion exchange purification	Layton Sugar Co. Layton, Utah	Ion exchange has for several years been used in beet sugar bleaching. Now Layton has proved the process for cane sugar, replacing bone char decolorization.	Ion exchange claimed to give higher yield and purity at lower cost with much less space for equipment, much lower capital cost.
Cane sugar	Mechanical	.....	More effective hydraulic method maintains uniform pressure in extraction mills. Also uses new method to remove mineral salts and ash (not ion exchange). Claim increased yields, lower costs.	Developed by Ultra-Sucro Co., New York, who is considering building demonstration mill.
Chlorinated organics	Modified Deacon	.....	Improved copper catalyst permits chlorination with HCl at 245–250 C. with yields of 88.94%.	Laboratory research done at Penn College.
Coal carbonisation	Fluidised carbonisation	.....	Crushed coal is charged to a fluidised bed in a preoxidiser where it is devolatilised and dried at 700–800 F. This then is carbonised at 800–1,200 F. in a carboniser. Steam maintains the temperature. Yields are 22–27 gal. tar, 3–4 gal. light oil, 1,300–1,450 lb. char per ton of coal.	A pilot-plant is in operation at Schuylkill Station of Philadelphia Electric. Capacity is 2 tpd. Developed by United Engineers & Constructors, Philadelphia.
Detergent sulfonates	Sulfonation with SO_3	Ninol Laboratories Chicago, Ill.	Salt-free detergent sulfonates made in one step by sulfonation with liquid SO_3 instead of oleum.	Plant in operation. Treplow Products, Paterson, N. J., uses similar process.
Detergents, synthetic	Continuous sulfonation	Votator Div., Girdler Co. Louisville, Ky..	In scraped-surface heat exchangers used as reactors, continuous sulfonation of alkyl benzene slurry with oleum gives uniform high activity synthetic alkyl benzene sulfonate detergents.	Girdler Co. handled process development.
Ethyl benzene	Fractionation	Cosden Petroleum Co. Big Springs, Tex.	Ethyl benzene, to be catalytically dehydrogenated to styrene, will be acquired by superfractionating mixed xylenes.	$3-million, 19-million-lb./yr. styrene plant under construction.
Fuel gas	High-pressure	Ruhrgas AG Dorstan, Germany	Mechanical improvements have kicked up yields three times. Unwashed coal in generators is passed countercurrent to steam and oxygen at 375 psi.	Output of 6 units is 500 million cu. meters of gas.
Fuel gas	Liquid slag	Union Rheinische Braunkohlen Kraftsoff AG Wesseling, Germany	Temperature in generator is kept well above melting point of ash to speed reaction velocities, minimize soft ash difficulties. Liquid slag transmits oxygen, is good heat-transfer agent when kept in turbulent motion.	Small pilot-plant.
Fuel gas	Underground coal gasification	Alabama Power Co. Gorgas, Ala.	Tests are trying out hydraulic fracturing of underground coal beds instead of electro-linking previously tried. Technique borrowed from oil well technology.	Joint venture with Bureau of Mines, Sinclair Coal and Stanolind. Fracturing process known as Hydrofrac.

About New Processes & Technology . . .

This seventh annual inventory lists 336 major processes and technology advances that were announced, commercialized or that made important news during the 24-month period ending July 1956. This list covers only those developments that have been made public and that have reached an advanced stage of development. To make this inventory checklist more valuable, we've condensed each item to its factual core. For information on previous process inventories, see p. 59.

HEAVY ORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Furfural	From bagasse	Central Romana By-Product Co. La Romana, Dominican Republic	Dried, fermented bagasse is hydrolized with H_2SO_4 at 50–100 psi. for 2–8 hr. Furfural is recovered via distillation of volatile products.	$7-million plant, first to use bagasse as raw material, produces 30 million lb./yr.
Glycerine	Hydroxylation	.....	Formic acid goes to glycerol formate, which is converted by reaction with methanol to glycerine. Excess of formic, low water content speed hydroxylation.	Patent obtained by Allied; no immediate commercial plans.
Glycerine	Ion exclusion	Dow Chemical Co.	High-purity glycerine can be purified from salt-containing mixture by ion exclusion. Process requires only one type of resin which does not need to be regenerated chemically. Feed of 30–35% glycerine is processed.	In pilot-plant stage at Lever Bros. Hammond, Ind. plant.
Glycerine	Synthesis	Shell Chemical Corp. Norco, La.	Isopropanol in liquid phase reacts with air to make H_2O_2 and acetone. IPA plus acrolein produces allyl alcohol. Hydroxylating the alcohol with H_2O_2 produces glycerine.	Individual reactions are patented. Shell plans 30-million lb./yr. H_2O_2 plant.
Hydrocarbon sulfonates	Continuous sulfonation	Chemithon Corp. Seattle, Wash.	Process sulfonates alkanes in 13 min. Plant is cheap, compact. Mixing of reactants occurs in special modified centrifugal pump.	Developed in cooperation with Oronite Chemical Co. In pilot-plant stage, first commercial plant to be sold in late 1956.
Methylamines	Catalytic conversion	Nitto Chemical Co. Yokohama, Japan	Any proportions of mono-, di- and trimethylamines can be obtained by recycling unwanted product through new special combination catalyst. Ammonia and methanol are reacted at 475 C. and pressures above 250 psi.	Capital investment is estimated at 40% less than conventional methods. Plant cost $250,000 and can turn out 1,000,000 lb./yr. with present batch-distillation system.
Pentachlorophenol	Two-stage chlorination	Reichhold Chemicals Inc. Seattle, Wash.	Trichlorophenol is reacted with free chlorine in presence of catalyst. Off-gases are scrubbed with phenol, making trichlorophenol which recycles to process. Pentachlorophenol yield is 95%. Cl_2 is recovered from HCl.	Process piloted since 1947. 6-million-lb. plant started production 1955, a second plant in June 1956 at Tacoma, Wash.
Pentaerythritol	.....	Heyden Chemical Co. Fords, N. J.	Considered very flexible, method can turn out any grade or type penta. Details not available.	A 25-million-lb./yr. plant is being readied for production.
Pentaerythritol trinitrate	One-step nitration	U. S. Navy, Allegany Ballistics Laboratory Cumberland, Md.	One-step mixed-acid nitration of pentaerythritol gives high yields of trinitrate plus tetranitrate.	Process is under security wraps.
Phthalic acids	Oxidation	Standard Oil Co. (Ind.)	Simplified oxidation of the side-chains of aromatic hydrocarbons, process produces better yields and higher purity polybasic acids. It can be used for production of anhydride and terephthalic acid.	World-wide rights to Scientific Design Co.'s process purchased by Standard.
Phthalic acids	Two-stage oxidation	Richfield Oil Co. Watson, Calif.	Process oxidizes petroleum xylene fractions with air in presence of cobalt soap catalyst. First step at moderate temperature and pressure (300 F.) removes ethyl benzene impurity as acetophenone. Second more severe stage oxidizes toluic acids from first stage.	Process developed at Stanford Research Institute is operating on semicommercial basis.
Phthalic anhydride	Fluid-bed	.....	Ortho-xylene can be used as starting material instead of usual naphthalene.	Process offered by Brown, Blauvelt & Leonard, New York.
Pyridine	Catalytic	.....	This is a vapor-phase reaction of gaseous ammonia and acrolein over an activated silica-alumina catalyst. Resin formation is avoided by forming acrolein directly in the reaction zone from acetaldehyde and formaldehyde.	Developed at Polytechnic Institute of Brooklyn. Studies carried out in 19-mm. borosilicate glass tubeing.
Synthesis gas	Dust removal	U. S. Bureau of Mines Morgantown, W. Va.	Moving bed of coke entrains dust particles from synthesis gas. Operates continuously.	Pilot plant in operation.
Synthesis gas	Nuclear reactor	.....	Pulverized coal, steam and oxygen would be piped through nuclear reactor at 2,000–3,000 F. to make synthesis gas. Silicon carbide would probably be used for the reactor tube.	Proposed by U. S. Bureau of Mines.
Terephthalic acid	Thermal rearrangement	Hercules Powder Co.	Heated under CO_2 pressure to 340 C., dipotassium salt of phthalic acid yields dipotassium salt of terephthalic acid.	In pilot plant stage.
Tetraethyl lead	Electrolytic	.....	Aluminum is reacted with ethylene and hydrogen to produce triethyl aluminum. This is electrolyzed in cell with lead anode to produce tetraethyl lead and high-purity Al.	Process proposed by Karl Ziegler of Germany is getting careful study by potential U. S. users.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Vinyl chloride	Fluidized bed		A fluidized catalyst bed (mercuric chloride on carbon carrier) adapted for making vinyl chloride. Bed temperatures can be closely controlled and maintained uniformly, eliminating hot spots.	Developed at Purdue University. Studies carried out in jacketed 2-in. iron pipe.
p-Xylene	Fractional crystallization	Standard Oil Co. of California (Calif. Research Corp.) Richmond, Calif.	Selective reaction of CCl_4 with para-xylene (but not with meta or ortho) forms solid compound, permits easy separation from meta-xylene. Recovery of pure meta is also high.	Demonstrated in laboratory. No commercial plans announced.

• Inorganics

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Alumina, titanium dioxide	From low-grade siliceous ores		Calcined ores are smelted with coke to make low-carbon iron or steel and a slag silica, alumina and/or titanium dioxide. Sulfuric acid leaching recovers aluminum and /or titanium values from slag.	Discovered by M. J. Udy, process is being developed by Strategic-Udy Metallurgical and Chemical Processes, Ltd.
Ammonium chloride	Pelletization	Canadian Industries Ltd. Hamilton, Ont.	Close control of crystal size is achieved by pelletizing dry ammonium chloride, followed by roll crushing. Replaces slow crystallization process.	In commercial operation.
Boiler feedwater	Seawater evaporation	Pacific Gas & Electric Corp. Morro Bay, Calif.	Triple-effect evaporation of seawater supplies feedwater makeup for power plant.	First industrial use in U. S. of seawater distillation.
Bromates	Electrolytic	Sanwa Pure Chemical Co., Ltd. Japan	Bromates are produced from bromides in electrolytic cells equipped with lead dioxide anodes. Lead dioxide replaces usual graphite anodes, eliminating spall and mud formation.	In pilot plant stage.
Calcium carbide	Continuous	Strategic-Udy Niagara Falls, Ont.	Horisontal continuous electric furnace gives higher purity calcium carbide for same power cost as conventional 85% purity calcium carbide.	Pilot plant planned using M. J. Udy's furnace design.
Calcium carbide	Oxythermal	Badische Anilin & Soda Fabrik Ludwigshafen, Germany	Lime and coke (in excess) are charged to a graphite-lined shaft furnace. Oxygen is introduced through air-cooled jets, reacts with part of coke to provide high reaction temperature. Liquid calcium carbide is tapped. Process doesn't depend on electric power.	70 ton/day pilot plant.
Calcium hydride	Indirect	Metal Hydrides, Inc. Beverly, Mass.	Reaction of calcium chloride, sodium and hydrogen produces fine powder containing 25% of highly reactive calcium hydride.	Powdered product offers certain advantages over older lump product, made directly from calcium and hydrogen.
Cement, portland	Fuller-Humboldt preheater	Allentown Portland Cement Co. Evansville, Pa.	Heat recovery from dry-process cement kilns is accomplished by countercurrent contacting of raw feed and kiln exit gases in a series of cyclone collectors. Several other heat recovery devices also recently introduced.	Plant capacity increased 75% with fuel reduction per bbl. of 30–40%. Process developed in Germany, being licensed to U. S. users by Fuller Co.
Cement, portland	Waste-heat recovery	Marquette Cement Mfg. Co. Milwaukee, Wis.	Hot kiln exit gas preheats feed before it enters kiln. Two passes through incoming feed reduce dust losses up the stack. Kiln is only 165 ft. long.	Developed by Allis-Chalmers. $7-million Marquette plant goes on stream at end of 1956.
Ceramic coatings	Flame spraying	Norton Co. Worcester, Mass.	Fine powdered metal oxide (alumina, zirconium oxide, titanium oxide, etc.) is mixed with water and an organic material (cornstarch). The plastic compound formed is extruded to form rods 24 in. long and ¼ in. dia. The dry rod is fed through a metallising gun using oxyacetylene flame.	Developed by the Norton Co. for depositing a high melting oxide on metal to protect metal from extreme temperatures and erosion.
Ceramic coatings	Flame spraying		Refractory and chemically inert ceramics, fed through a simple flame gun, can be coated onto metals or other bases by technique similar to metallising. Base is not heated unduly. Builds up layer of sintered refractory oxides.	Process developed by Armour Research Foundation, Chicago, produces coatings effective in protecting base metals against high-temperature erosion. Porosity can be eliminated by over-coating with ARF's solution ceramics.
Ceramic coating	From solution		Solution of refractory oxides is sprayed on surface to be coated; solvent is evaporated, leaving ceramic film molecularly bonded to the surface.	Developed by Armour Research Foundation, Chicago, for licensing. Said to fire at lower temperatures, giving controllable thickness highly resistant to heat and corrosion.
Char	Medium-temperature carbonization	Koal Krudes, Inc. Red Lodge, Mont.	Carbonisation of subbituminous coal takes place within annular space of two concentric vertical cylinders.	Commercial plant is being built, its product is destined for nonferrous metal refineries.

INORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Chlorine-caustic soda	Small mercury cell..	Power Station Pretoria, South Africa	Small cell (3,000–4,000) amp. features low first cost. Denuding compartment is slung under electrolyser, making small package unit.	Developed by International Electrolytic of England. Plant produces 70 lb./hr. chlorine with six cells.
Chlorine-caustic soda	Vertical mercury cell	.....	New electrolytic cell bank of 60,000 amp. capacity takes only 50 in. x 36 in. floor space, 36 in. high. This bank consists of 20 vertical mercury cells 2 in. thick, taking 40% less mercury than present cells. Cathode is mercury amalgam on fine vertical screen, anodes are carbon rods.	Cell developed by Vittorio De Nora, of Italy, is handled in U. S. by Monsanto Chemical Co. as in case of earlier De Nora mercury cell design.
Chlorine dioxide.....	Electrolytic.....	Pennsylvania Salt Mfg. Co. Portland, Ore.	Improved electrolytic cell is being tried in full scale operation for the production of sodium chlorate. Details are being kept secret until patent is issued.	
Chlorine dioxide.....	From sodium chlorate	.....	Process gets quantitative yields from sodium chlorate. Savings in pulp bleaching expected to be $8,000/yr. per ton-day of chlorine dioxide produced.	Being developed by Olin Mathieson.
Chlorine dioxide.....	Reduction.....	West Virginia Pulp & Paper Co. Covington, Va.	Adding sodium chloride to the reduction mixture in the reduction of sodium chlorate with sulfur dioxide boosts yields about 97%, drops free chlorine in gas, reduces chlorate lost in waste reaction liquor, drops chemical costs.	Developed by Olin Mathieson.
Chromic acid.....	Ion exchange.....	.....	Ion exchange removes metallic contaminants by passing chromic acid solution through cation resin. Resin is sulfonated infusible polymerisate of polyvinylaryl compound. Treatment on hydrogen cycle permits recovery baths.	Patent granted to Allied's Mutual Chemical Div., available for general use.
Chromite.....	Acid leaching.....	Mineral Sands Co. Bandon, Ore.	Chromium ore is concentrated in spiral gravity concentrator, then roasted and acid-leached simultaneously for high-grade chromite extraction.	Untried, new plant expected to cost $3 million and produce 200 tons/day. Version of Battelle Institute wartime process.
Diamonds.....	Synthetic.....	General Electric Co.....	In a chamber, carbonaceous material is subjected to temperatures over 5,000 F., at pressure of 900,000 psi. Diamonds are produced measuring 1/16 in. long. Composition is about 85% carbon, 15% ash.	
Dry ice.....	Sodium phosphate byproduct	Westvaco Mineral Products Div. Lawrence, Kan.	By putting phosphoric acid neutralisation in manufacture of industrial phosphates on continuous basis, a steady supply of pure byproduct CO_2 is obtained to make dry ice.	Commercial operation at 60 tons/day.
Ferrocene.....	Via iron carbonyl...	.....	Ferrocene (bis-cyclopentadienyl) makes a good fuel additive and polymerisation catalyst. Made by heating iron carbonyl and cyclopentadiene to 400–900 F.	Standard Oil of Calif., Hercules have patents on the process.
Fluorine.....	Electrolytic.....	Carbide & Carbon Chemicals Co. Oak Ridge, Tenn. Paducah, Ky.	Cheaper fluorine with doubled cell life claimed for new medium-temperature electrolytic fluorine cell with fewer, wider anodes and polarisation minimised by improved electrolyte.	Cells operate at 8–10 v., 3,500–4,000 amp., current efficiency of 90%, electrolyte temperature of 200–220 F. 2 tpd plant was reported.
Hydrazine.....	Azeotropic distillation	Olin Mathieson Chemical Corp. Lake Charles, La.	Improved dehydration process for hydrazine hydrate (which can be concentrated only to 70% by simple distillation) involves azeotropic distillation with aniline as the entrainer.	Process developed by Battelle Memorial Institute for Olin Mathieson.
Hydrogen peroxide...	Anthraquinone.....	Becco Chemical Div., Food Machinery & Chemical Co. Buffalo, N. Y.	Nonelectrolytic H_2O_2 process. Probably based on German Pfleiderer process, in which 2-ethyl anthraquinone is dissolved in an organic phosphoric acid ester, reduced to hydro derivative, and oxygen blown through to form peroxide, regenerate 2-ethyl anthraquinone.	Now operating
Hydrogen peroxide...	Nonelectrolytic.....	Allied Chemical & Dye Corp., Solvay Process Div. Syracuse, N. Y.	By interrupting the hydrogenation-oxidation cycle to dehydrogenate catalytically tetrahydroanthraquinone is kept from building up during autoxidation process.	In commercial operation.
Hydrogen peroxide, solid	Continuous fractional crystallisation	Becco Chemical Div., Food Machinery & Chemical Co. Buffalo, N. Y.	Fractional distillation concentrates peroxide to 90% for feed to crystallisation operation. Peroxide of 99.6% purity is possible.	Details haven't been revealed. Process is believed to be in pilot-plant stage.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Hydrogen sulfide	Synthetic	Sherritt Gordon Mines Ltd. Fort Saskatchewan, Alta.	Reactor is charged with solid sulfur, hydrogen is introduced continuously to make hydrogen sulfide for metallurgical uses.	Developed by Girdler Co.
Lithium chemicals	Chloride volatilisation	.....	Pegmatite is starting material, processed by chloride volatilisation. No details available.	Scientific Design Co., developer of the process, is negotiating with prospective users.
Lithium chemicals	Spodumene decrepitation	Lithium Corp. of America Bessemer City, N. C.	Spodumene is transformed (decrepitated) from natural alpha form to beta, then digested in H_2SO_4 and converted finally to lithium carbonate and lithium hydroxide.	Commercial operation in $7-million plant.
Lithium hydroxide	Limestone roasting	American Lithium Chemicals Co. San Antonio, Tex.	Process involves direct roasting of lepidolite ore from Southern Rhodesia. Previous use of lepidolite, mainly in Europe, has been small scale.	Plant in operation, cost $6.6 million.
Manganese oxides	Dithionate	.....	Low-grade manganese ores leached in water with SO_2, forming manganese sulfate and dithionate which are precipitated (after filtration of $CaSO_4$) with lime. Resulting hydroxide is sintered to mixture of lower oxides.	Pilot planted at Boulder City, Nev., by Bureau of Mines, using 9.6% Arizona ore. Product is of metallurgical grade.
Manganese salts	Ammonia-CO_2 leach	Manganese Chemical Corp. Riverton, Minn.	Roasted low-grade Mn ore is ground to 35 mesh, leached with NH_3-CO_2 solution. Complex manganese ammonium carbonate is thickened, steamed to drive off NH_3, precipitate manganese carbonate, which is centrifuged, dried.	Plant treats 100 tpd. ore, makes 50,000 lb. of very pure manganese carbonate. Expect process to be economical.
Manganous chloride	Coke fusion	Armour Research Foundation Chicago, Ill.	Open-hearth slag is fused with coke and calcium chloride in an arc furnace. Manganous chloride is recovered.	Technically successful but economically unattractive.
Metal halides	Halogenation of carbides, oxides	Metal Chlorides Corp. Middleport, N. Y.	Furnace, built for continuous halogenation of metal carbides, oxides, ores or slags, operates well above 4,000 F. It stabilizes temperatures at any level, maintains endothermic reactions, has low heat loss, provides maximum temperatures at point where chlorine and feed material make contact.	In pilot-plant stage. Development has been taken over by Salem-Brosius. Carnegie, Pa.
Mica sheets	Jet splitting	Integrated Mica Corp. Woodmere, N. Y.	High-velocity water jets split mica into thin flakes, which are formed into sheets.	Plant being built in Belgium to use this process.
Nitrogen-15	From nitric acid	.....	Nitric acid and sulfur dioxide gas react to form nitric oxide gas and sulfuric acid. The nitric oxide, in series of exchange reactions, transfers N^{15} to nitric acid.	Process cuts cost of N^{15} from 60% purity at $175,000/lb. to 95% purity at $500/lb. In research stage by AEC-supported Columbia University.
Nitrous oxide	Ammonium nitrate decomposition	Ohio Chemical Pacific Co. Berkeley, Calif.	Continuous decomposition of 83% ammonium nitrate solution in stainless steel retort at less than 390 F. is key to process.	Plant capable of producing 70-million gal./yr. was due on stream April 1956, costing $500,000.
Oxygen	Steel manufacture	McLouth Steel Corp. Trenton, Mich., and others	High-purity oxygen is put on a tonnage basis in Brassert process to make high-quality steel.	Turning out 160 tons/day of 99.5% oxygen. Plant cost $2-million.
Pigments, colored	Three-step	Seidlitz Paint & Varnish Co. Kansas City, Mo.	Process produces dry powder pigments that can be readily dispersed in paint vehicle. Wet pigment press-cake is kneaded with phase transfer vehicle, mass is diluted with water, particles are recovered by filtration and dried.	Patent granted.
Perchlorates	Electrolytic	American Potash & Chemical Co. Henderson, Nev.	Process replaces the usual platinum anodes for lead dioxide anodes. Savings in large inventory platinum is the result. Perchlorate production will be increased for rocket fuel use.	In pilot-plant stage.
Phosgene	Electric furnace	General Aniline & Film Linden, N. J.	CO_2 is passed up a bed of hot petroleum coke, heated by two stationary electrodes, in a modified electric furnace. CO formed is reacted with chlorine to form phosgene.	Reactor is receiving intensive tests.
Polyphosphates	Conventional	Shea Chemical Co. Jeffersonville, Ind.	Equipment improvements overcome disadvantages of older processes. Phosphorus burner is large carbon "Quonset hut," with good cooling water distribution. Pre-reaction of soda ash and part of acid eliminates foam problems.	Plant produces 80,000 tons/yr. of H_3PO_4, makes Na tripolyphosphate, tetra Na pyrophosphate, food-grade acid.
Polyphosphates	Conventional	Virginia-Carolina Chemical Co. Fernald, Ohio	Equipment improvements have overcome main objections to older process, including stainless steel phosphorus burner, water-jacketed packed P_2O_5 hydrator, simplified continuous reactor for H_3PO_4 and soda ash.	Design gives high acid recovery in hydrator, eliminates Cottrell precipitator, gives complete recovery of P_2O_5.

INORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Potassium borohydride	Via sodium borohydride	Metal Hydrides, Inc. Beverly, Mass.	Sodium metal in oil under hydrogen is agitated to produce dispersion of NaH. By adding methyl borate sodium borohydride is produced. Saturated sodium compound solution is agitated with KOH and potassium borohydride is separated by centrifugation.	Roundabout process cuts costs, boosts yields.
Radioactive waste concentration	Ion exchange.....	Argonne National Laboratory Lemont, Ill.	Electromigration through two ion exchange membranes decontaminates aqueous solutions. Power cost is less than for vapor recompression distillation.	Process proposed, based on experimental data.
Rare earth salts.....	Ion exchange.....	Lindsay Chemical Co. West Chicago, Ill.	First commercial use of ion exchange to purify crude mineral mixtures. Purities up to 99+% possible. Plant head feed rate is 50 lb./day.	Process patterned after one developed at Iowa State College. Replaces only the purification steps in Lindsay process. Rest are still chem cal.
Salt cake.....	Natural brine cooling	West End Chemical Co. Searles Lake, Calif.	Company produces soda ash and borax from Searles Lake brine, leaving a residue containing Na_2SO_4. Further chilling from 60 to 45 F. forms Na_2SO_4. 10 H_2O crystals which are classified, separated and evaporated to anhydrous form.	Special patented evaporator is used to overcome trouble from inverse solubility of Na_2SO_4, second unit under construction.
Silica building material	From rice hulls.....	.....	Usually wasted rice hulls are burned to an ash flake containing 94.5% silica. Porous nature of flake makes it a good insulation. Mixed with soil the ash is pressed into bricks for construction of various shelters.	Developed at Louisiana State University still in laboratory stage.
Soda ash.....	NaOH carbonation.	Dow Chemical Co. Freeport, Tex.	Process involves carbonation of NaOH liquor from electrolytic chlorine-NaOH cells.	Plant costing $3 million will produce 300 tons/day.
Sulfur.....	Pyrites distillation..	Noranda Mines, Ltd. Hamilton, Ont., Canada	Plant, often reconsidered, went into operation late 1954, making sulfur from pyrites by roasting with restricted air to distill off half the sulfur. Completion of roasting gives SO_2.	Plant gets 62 tpd. sulfur, 240 tpd. SO_2, 252 tpd. iron oxide sinter from 370 tpd. pyrites. SO_2 goes to acid in an adjoining plant.
Sulfur.....	Solvent extraction..	American Sulfur & Refining Co. Sulphurdale, Utah	$1.1-million plant completed to produce 100 tpd. sulfur from low-grade surface ores. Uses an aromatic solvent extracted from petroleum. Solvent takes up sulfur at 200 F., drops it at 70–80 F.	Process, used for first time, is based on a 1940 patent of Esso Research & Engineering Co. Produces 99.7% S from 20% ore.
Sulfur dioxide, liquid.	Flash smelting.....	International Nickel Co. Copper Cliff, Ont.	Inco flash smelting process. Finely divided copper concentrates and flux are injected with oxygen into a furnace, producing matte, slag and a gas containing 75% SO_2. Eliminates fuel usually required for smelting. The gas is scrubbed, treated in a Cottrell and compressed to liquefy SO_2.	Developed by International Nickel, Canadian Industries, Ltd., and Canadian Liquid Air, Ltd.
Sulfur mining water disposal	Wooden reactor....	Texas Gulf Sulphur Co. Spindletop Dome, Tex.	Sulfide-containing waters first passed through gas separator, then treated in redwood tanks with H_2SO_3 for 2 hr. at pH 2.8. Effluent limed to pH 7.2 and flocculated with alum.	Overflow from final settling tanks is free of sulfides, relatively stable, neutral and saline, suitable for discharge to streams.
Sulfuric acid.....	Autoxidation of pickle liquor	British Iron & Steel Research Assoc. Steel Co. of Wales. Simon Carves, Ltd. United Kingdom	Ferrous sulfate crystallised out of waste liquor, crystals roasted to ferric oxide and sulfur dioxide. SO_2 reacts over manganese sulfate catalyst to form sulfuric acid.	After five years of pilot-plant work, process is ready for commercialization.
Sulfuric acid recovery	Autorefrigeration, fractional crystallization	.....	Process is primarily intended for recovery of 90% spent alkylation acid. Organic liquid carrier adapts autorefrigeration, crystallization, centrifugation to acid recovery.	Commercial installation shut down in order to iron out kinks in laboratory. Developed by M. W. Kellogg.
Sulfuric acid recovery	Sludge decomposition	L. Sonnenborn Sons Petrolia, Pa.	High recycle ratio of coke carries enough heat to decompose acid sludge in absence of air. Circulating coke is heated in tubular furnace. Process can handle wide range of acid-containing sludges.	In commercial operation. Similar unit installed by Stauffer at Hammond, Ind.
Sulfuric acid recovery	Sludge decomposition	Monsanto Chemical Co. Avon, Calif.	Sludge is mixed with circulating coke, decomposed in mechanically rabbled, hearth-type furnace.	Similar unit at Gulf Oil Corp., Port Arthur, Tex. Monsanto developed process.
Supertropical bleach.	Counter-current mixing	U.S. Army Chemical Center Edgewood, Md.	Counter-current streams of hydrated lime and chlorine gas (120–170 F.) react in a series of three horizontal troughs stacked one above the other.	Process is easy to control, highly efficient in its use of chlorine. Plant being designed.
Titanium tetrachloride	.....	Stauffer Chemical Co. Niagara Falls, N. Y.	Called new and improved the process is being studied for full scale operation.	In semi-commercial production.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Titanium tetrachloride	Fluidized bed	Du Pont Co. Edge Moor, Del.	Mixture of titanium ore and coke is chlorinated in fluidized bed at 800-850 C. Process can use titanium slag.	In commercial operation. Titanium Corp. of America and Stauffer also thought to use fluid-bed chlorination.
Water, desalted	Freezing	University of Washington Seattle, Wash.	As sea water freezes, fresh water precipitates as ice crystals. Brine collects at bottom of vessel and is replaced by water of lesser density. Process gives a potable water and the energy needed for refrigeration is far less than required for distillation.	Experimental work by University of Washington on an ONR contract.
Water, desalted	Plastic solar still	Bjorksten Research Laboratories Madison, Wis.	A standard still with 10 sq. ft. of surface area will produce 0.4275 gal. of water per 1,000 Btu. day.	Research to continue.
Zinc oxide	Direct oxidation	Northwest Refining & Chemical Co. Spokane, Wash.	Standard or low-grade zinc sulfide flotation concentrates are dried, screened, flash oxidized at 2,600 F. in special reverberatory furnace without preliminary roasting. Sulfur in ore acts as fuel booster.	Process successful on small scale. Company estimates plant cost at 10% of conventional process. Plant being built.

• Metals

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Beryllium	Chelation	.....	Sulfated ore is leached with water. A chelating agent plus NaOH converts heavy metals into chelates, aluminum into sodium aluminate and beryllium into sodium beryllate. Heating to 100 C. hydrolyses beryllate to insoluble hydroxide, which is converted to metal.	Developed by Brush Beryllium Corp.
Bismuth	Electrolytic	U. S. Bureau of Mines Albany, Ore.	Fused $BiCl_3$ is electrolysed in KCl-LiCl carrier salt. Cathode efficiency almost 100%, yield is 88.8%. Power is 1.27 kwh./lb. of Bi deposited.	Experimental.
Cesium	Radioactive waste disposal	General Electric Co. Hanford, Wash.	By removing radioactive cesium from waste from the plutonium plant, waste material can be pumped into pits in sandy soil. This eliminates storing radioactive wastes in costly steel and concrete containers.	
Chrome plating	Electrolytic	United Chromium, Inc. New York	Plating in ordinary equipment with a special chromic acid bath having automatic regulation of catalyst concentration produces crack-free coatings requiring no nickel or copper undercoat.	Claimed to give easily buffed matte finish directly on steel, with much better than normal corrosion resistance.
Cobalt	Alkaline leaching	Metallurgical Resources Inc. Newburgh, N. Y.	Leaching operation is carried on in an autoclave under closely controlled conditions of temperature and pressure. Impurities (arsenic, sulfur) are solubilised and reduced to less than 2%.	A 10 ton/day facility is under construction.
Columbium, tantalum	Magnetic concentration	.....	Differing magnetic properties of the minerals involved is key to process. Sands are scrubbed to remove iron stains that would affect magnetic susceptibility.	Developed by Bureau of Mines.
Ferromanganese	Two-stage electrothermic	Strategic-Udy Niagara Falls, Ont.	Low-grade ore is calcined at 2,000 F. with coke and lime in electric furnace. Molten slag, containing Mn goes to second furnace, treated with more coke and lime.	$2-million pilot plant under construction
Gallium	Zone refining	.....	Zone refining of gallium trichloride yields very high purity product. Trichloride is made by bubbling chlorine through molten gallium, then distilled under nitrogen for the refining step. Twenty zone passes reduce the impurities to one part per million.	Under study in the Services Electronics Research labs of the United Kingdom Admiralty.
Hafnium	Kroll	U. S. Bureau of Mines Albany, Ore.	Hafnium metal of 98+% purity is made by magnesium reduction of the tetrachloride.	Several hundred pounds have been made.
Ionium (thorium-230)	Extraction	.....	Rare earth residue from radium purification of pitchblende is treated with concentrated nitric acid, followed by solvent extraction with mesityl oxide. Water wash, ammoniation and centrifugation of water layers leaves precipitate that is treated with hot acids to separate out thorium.	Developed in labs of Atomic Energy of Canada, Ltd. at Chalk River, Ont.

METALS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Iron	Fluidized-bed reduction	Hydrocarbon Research Inc. Trenton, N. J.	Powdered iron oxide is charged into fluid bed unit, leaves it as same particle size iron powder. Operating conditions are 900 F. and 400 psi. Hydrogen is reducing agent.	Expeimental unit is being tested. Joint development with Bethlehem Steel.
Magnetic iron ore	Fluidized bed	Jones & Laughlin Steel Corp. Negaunee, Mich.	Nonmagnetic low-grade ore is reduced in fluid-bed reactor to magnetite, which can then be beneficiated to 63% Fe by magnetic separation.	In pilot-plant operation.
Metal etching	Chemical milling	North American Aviation, Inc. Los Angeles, Calif.	By coating metal parts with special masking coating where action is to be prevented, and immersion in Turco etching solution, smooth and accurate chemical "milling" of metal is obtained.	Process of "Chem-milling" developed jointly by North American and Turco Products, Inc., also of L. A. Used on aluminum but expect to apply also to steel, stainless, titanium. Accuracies of 0.002 in. claimed at low cost.
Metal plating	Vapor pyrolysis	.....	Vaporized metallic compound deposits metal atoms on surface heated to the compound's decomposition temperature.	Developed by Commonwealth Engineering Co., Dayton, Ohio. Said to be ready for commercialization, with many firms interested. Army Chemical Center, Edgewood, Md., had pilot plant.
Molybdenum	Calcium reduction	U. S. Bureau of Mines Albany, Ore.	Calcium metal (vacuum sublimed) is added to a stainless steel bomb together with MoO_3 and iodine (1 lb. each MoO_3 and calcium plus 50 grams iodine). Bomb is fired electrically in a remote location. Average recovery of molybdenum is about 97%, 20–25 lb./batch.	Experimental.
Rhenium	From low-grade ores	.....	Commercial production of this very rare metal is predicted since this many-stepped extraction process has been developed. Uses seen for rhenium include thermocouples and filaments, pivot bearings, pen points.	In Battelle Memorial Institute labs.
Silicomanganese	Electrothermic	.....	Silicomanganese is produced by heavy-media separation (or oil-emulsion flotation) and electric furnace smelting using hogged fuel as reductant.	Developed by Bureau of Mines.
Silicon, germanium	Diffusion of impurities	Bell Telephone Laboratories New York, N. Y.	Process controls amount of impurities in transistor. Silicon or germanium semiconductor is heated in vacuum oven, the vaporization of source crystals introduce impurities by diffusion.	In laboratory stage.
Sodium	Molten-lead electrolysis	.....	New cell uses molten lead cathode, based on old German idea. This idea, adapted to modern mercury cell construction, is claimed to produce sodium, sodium alloy or rayon-grade caustic costs well below those of conventional at equipment.	Process developed by Joshua Ssechtman. Will be licensed through W. H. Friend of Amroc, Inc., New York.
Sodium-potassium alloy	Distillation	Callery Chemical Co. Callery, Pa.	Molten potassium chloride at 1,550 F. feeds at the mid-point of a distillation column packed with stainless steel rings. Sodium vaporising in reboiler rises countercurrent to potassium chloride. Overhead product is a mixture of sodium and potassium vapors which condense as NaK.	In commercial operation.
Steel, clad	Vacuum brazing	Chicago Bridge & Iron Co. Birmingham, Ala.	Thin sheet of copper or copper alloy is sandwiched between stee. base and cladding metal, vacuum applied at brazing temperature.	Trade-named Hortonclad, product is mechanically equivalent to conventional hot-rolled steels.
Taconite agglomerate	Furnace	Reserve Mining Co. Babbitt, Minn., and Silver Bay, Minn.	Process involves bentonite addition and heat hardening at 2,400 F. in traveling-grate furnace.	Process developed jointly by Arthur G. McKee Co. and Allis-Chalmers. First plant, 1,000 tpd., second plant, 12,000 tpd., now operating.
Tantalum, ductile	Kroll	U. S. Bureau of Mines Albany, Ore.	Tantalum pentachloride is produced by direct chlorination of tantalum scrap. Excess magnesium is added and reduction carried out in a flowing helium stream. Then vacuum distillation gives a pure ductile tantalum.	Laboratory production.
Titanium	Electrolytic	Horizons, Inc. Cleveland, Ohio	Titanium metal is made by electrolyzing titanium monoxide in molten anhydrous calcium chloride at 850–900 C.	Work in laboratory stage. Product not of acceptable purity as yet.
Titanium	Low-pressure sodium reduction	.....	Low-pressure sodium reduction in a water-cooled steel bomb skips the usual sponge step in making titanium.	Developed in the Bureau of Mines lab, Albany, Ore.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Titanium	Sodium reduction	Electro Metallurgical Co. Ashtabula, Ohio	Process involves sodium reduction (rather than magnesium reduction as in Kroll process) of titanium tetrachloride. British ICI has similar process.	$31.5-million plant will produce 7,500 tons titanium per yr.
Titanium	.....	Continental Titanium Co.	Details of process are secret, but it is reported that this route to titanium skips the sponge step.	In final development stage.
Titanium ingots	Double melting	Mallory-Sharon Titanium Co. Niles, Ohio	New furnaces are constructed to withstand much higher pressures than commonly encountered. Operation is entirely by remote control.	In production.
Titanium ingots	Vacuum melting	Titanium Metals Corp. of America Henderson, Nev.	Vacuum melting furnace for titanium ingots to 4,000 lb. also reduces hydrogen in metal to as low as 50 ppm., better than conventional argon or argon-helium flooded furnaces.	Gives better metal properties. Results so good that furnaces for 8,000-lb. ingots being considered.
Titanium plating	Electrolytic	.....	Process for electroplating titanium on steel. Titanium anodes in a fused-salt electrolyte are used at elevated temperatures. Thickness up to 2 mils has been achieved.	Developed by Chemical Associates Washington, D. C.
Uranium	From lignite	.....	Lignite often contains up to 0.4% uranium. Ohio Oil and Arthur Pew of Philadelphia claim first economic means of extraction.	AEC willing to negotiate contract to buy uranium. Ohio ready to push pilot-plant development. Catalytic Construction will handle engineering.
Uranium	Ion exchange	Various	Dilute solution of uranium from acid leaching is passed through series of ion exchange columns. Resin adsorbs uranium sulfate complex ions. Resin is eluted by $NH_4NO_3 + HNO_3$ or $NaCl + H_2SO_4$. Uranium is precipitated by neutralising with NH_3 or MgO.	More than 20 large installations in operation throughout the world.
Uranium	Percolation leaching	Trace Elements Corp. Maybell, Colo.	Low-grade uranium ores will be processed for uranium concentrates by percolation leaching similar to coffee-making operation.	A $1-million mill, authorized by AEC, is planned for late 1956. A pilot plant is being built to supply data.
Uranium	Reduction of tetrafluoride	National Lead Co. of Ohio Fernald, Ohio	Ore concentrate is concentrated in nitric acid, uranyl nitrate is calcined to UO_3 and reduced to UO_2. Anhydrous HF converts uranium dioxide to UF_4. A thermite-type reaction reduces UF_4 to high-purity uranium metal.	AEC gets uranium product for use in atomic reactors. Operation on commercial scale since 1953.
Uranium	Resin-in-pulp	Various	Large-mesh ion exchange resins are immersed directly into leached pulp, eliminating filtration stage. After loading, uranium is eluted from resin.	In commercial use in several new plants in Western U. S.
Uranium	Solvent extraction	Kerr-McGee Shiprock, N. M. Vitro Uranium Co. Salt Lake City, Utah	Extraction of uranium from dilute acid-leach solutions will use such solvents as dodecyl phosphoric acid, 2-ethyl hexyl phosphoric acid and secondary amines.	Both firms have pilot plants, plan to go commercial.
Uranium reprocessing	Equipment decontamination	Idaho Chemical Processing Plant Idaho Falls, Idaho	Direct maintenance of reprocessing equipment exposed to intense radioactivity is possible by chemical decontamination of the units used in the reprocessing of spent nuclear fuel. Nitric, citric, tartaric, oxalic acids and sodium hydroxide, sodium fluoride are chemicals used.	Process is operating on production scale for AEC.

About Previous Process Inventories . . .

For projects not listed in this issue, consult the New Processes & Technology tabulations initiated by CE in 1951 and published annually in these issues: February 1951, 1952, 1953; January 1954; Inventory 1954, 1955. These surveys, an editorial feature exclusive to CE, have listed a total of over 1,700 new technology advances. Since few details have been published on most of these, for more information we suggest you contact the firms that developed or is using the new technique.

METALS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Uranium, tantalum, columbium, others	One-step chlorination	.....	Addition of sodium chloride to Western black sands promotes formation of stable nonvolatile ferric chloride complexes. Heating charge to 930 F. first distills off titanium tetrachloride, then columbium, tantalum and uranium.	Developed by the Bureau of Mines' Albany, Ore., process promises easier and cheaper recovery of metals and rare earths.
Zinc.....	Fluid-bed reduction	Cerro de Pasco Co. La Oroya, Peru	Pelletised zinc concentrate is roasted to sinter in four-stage fluid bed. The four stages are formed by sets of side air inlets; supporting and separating grates are not required. Thus a simple design unit garners the advantages of stage-beds, e.g. no short-circuiting.	Developed by New Jersey Zinc at Palmerton, Pa. Cerro's unit handles 90 tons/day of concentrate.
Zirconium.....	Electrolytic.....	Horizons, Inc. Cleveland, Ohio	K_2ZrF_6 is electrolyzed in NaCl bath to produce ductile zirconium. Yield and current efficiencies are good enough for commercial operation.	Pilot plant can make 30–40 lb. per run.

• Petroleum & Natural Gas Products

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Acetylene.....	Ammonia absorption	.....	Purification of acetylene obtained via partial oxidation of methane is accomplished by absorption of product in liquid ammonia.	Developed by Societe Belge de l'Azote in Belgium.
Acetylene.....	Partial oxidation...	American Cyanamid Corp. Avondale, La.	Using German-developed BASF process. Oxygen and methane are heated to 600 C., mixed, reacted and quenched in a special burner. Product gas containing 8.5% acetylene is stripped with undisclosed selective solvent.	Avondale plant has 60 tpd. capacity. Process available for license in North America through Chemical Construction Corp.
Alkylate.....	Effluent refrigeration	Texas Co. Amarillo, Tex.	Hydrocarbon effluent is separated and used as refrigerant in cooling element of reactor. Much conventional fractionation is eliminated since a large portion of recycle isobutane can be obtained by flashing refrigerant condensate.	In commercial operation. Capital investment and operating cost have been reduced.
Aromatics.....	SO_2 extraction.....	Continental Oil Co. Lake Charles, La.	Uses hydrocarbon wash to extract aromatics from reformer product. Gets good separations, requires only one stage to remove SO_2 from raffinate.	Unit in commercial operation handles 3,570 bbl./day from Platformer.
Crude oil.....	Catalytic hydrogenation	.....	Oils, composed mainly of cyclic and polycyclic hydrocarbons, are much more easily refined when they are catalytically hydrogenated at high pressures.	Natural Resources Research Institute is studying this process.
Diesel oil.....	Desulfurization.....	Husky Oil Co. Cody, Wyo.	Fixed-bed catalytic reactor and hydrogen-containing gas converts the sulfur in distillates to hydrogen sulfide. Nitrogen and oxygen are also removed to improve color, odor and cetane number.	In commercial operation.
Ethylene.....	Modified Wulff.....	.....	Gas oil treated by modified Wulff process. Being considered by Oronite Chemical for new ethylene plant at Perth Amboy, N. J.	Experimental now; developed by California Research Corp.
Fuel gas.....	Pressure hydrogasification	.....	Process completely converts liquid hydrocarbons and natural gasoline to fuel gas of 930–1,100 Btu./scf. Higher mole weight feeds give 82% conversion. Use three-section tube furnace for preheat, catalytic and thermal cracking.	Developed by Institute of Gas Technology, Chicago. Continuous pilot plant converts 50–80 gph. of hydrocarbons plus 6–100 scf. H_2/gal. to gas.
Fuel oils.....	Catalytic hydrogenation	Gulf Oil Corp.....	Called "Gulfining," this catalytic hydrogenation reduces sulfur content and carbon residue by 80–90%, improves resistance to sludge formation of fuel oils while in storage.	In development stage.
Gasoline.....	Catalytic cracking..	.....	High-alumina-content catalyst is highly resistant to poisoning by trace metals in charge stocks. Catalyst gives high liquid yield, has low loss. Alumina content ranges up to 90%.	Developed by Filtrol Corp.
Gasoline.....	Catalytic cracking..	Sun Oil Co. Sarnia, Ont.	Catalytic cracking process can handle heavy, metal-contaminated bottom residues, yields high-octane gasoline and domestic furnace oil.	Available from Houdry Process Corp., called Houdresid process.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Gasoline	Catalytic isomerization	.....	Upgrade pentane, hexane fractions of straight run naphthas or natural gasoline by isomerising to isopentane and isohexane in the presence of hydrogen. Catalysts used are platinum on silica-alumina, $AlCl_3$ in molten $SbCl_3$.	Developed by Standard (Ind.) and Shell.
Gasoline	Catalytic reforming.	British Petroleum Co.	High-octane gasoline was produced from Middle Eastern naphtha which is highly paraffinic. Standard R-5 UOP platforming catalyst was used.	Product 92 RON clear is being commercially produced.
Gasoline	Catalytic reforming.	Socony Mobile Oil Co. Various	Fixed bed process using platinum catalyst —used on low-sulfur, straight-run naphthas. For these stocks, extensive catalyst regeneration is not needed.	Nine units being built in U. S.
Gasoline	Fluid hydroforming, Model II	.....	Efficiency of fluid hydroforming increased, investment cost cut 15–20%, processing costs lowered 7–10 c. per bbl. feed by circulating inert "shot" heat carrier with catalyst to recover regeneration heat beyond capacity of catalyst alone.	Developed by Esso Research & Eng Co. Proved in pilot plant at Baton Rouge. Recovers all regenerator heat with minimum recycle of reactor tail gas.
Gasoline	Fixed-bed reforming	Standard Oil Co. (N. J.) Edmonton, Alta.; Billings, Mont.; Baltimore, Md.	Catalyst uses very little platinum. Regenerating system is such that the catalyst can be used almost indefinitely.	In commercial operation.
Gasoline	Mercaptan removal.	Cities Service Refining Corp. Lake Charles, La.	Replacement of Raschig-ring-packed stripper in Unisol process with bubble-cap tower gives higher extraction efficiency, without fouling of heat exchangers from Raschig ring erosion.	Decreased maintenance is expected. Unit went on stream Oct. 1954.
Gasoline	Reforming with non-aromatic recycle	.....	New processes developed by both Universal Oil Products Co., Chicago, and Houdry Process Co., Philadelphia, increase octane of catalytic reformer gasoline by passing stabilized reformer product through extractor, removing and recycling low-octane non-aromatic fractions to reformer. Both processes feature mild conditions.	UOP process is called Rexforming· Houdry process is Iso-Plus. Variation of latter uses thermal reforming of stabilized reformer gasoline.
Gasoline	Two-stage fluid cracking	Shell Oil Co. Anacortes, Wash.	First stage of cracking takes place in a riser reactor, a pipe in which vaporized crude and catalyst flow concurrently; second stage is conventional. Process gives higher conversion than single stage.	On stream.
Gasoline liquids	Dry adsorption	Jefferson Lake Sulphur Co. Bayou Sale, La.	Columns for separating liquids from natural gas feed are mounted on revolving turntable so that each column unit receives an injection of gas feed, adsorbs liquid to be separated and is purged to start next cycle.	Plant built, expected to separate 5,000 gal./day of natural gasoline, equal amounts of mixed butane and propane.
Gasoline, low-sulfur	Hydrodesulfurization	.....	Vanadium oxide has been found to be a suitable catalyst for reducing sulfur content of gasoline by hydrogenation.	Experimental development of Illinois Institute of Technology, Chicago.
Gasoline, synthetic	Modified Fischer-Tropsch	SASOL (Union of South Africa Govt.) Vereeninging, Union of South Africa	Process is fluidized-bed version of Fischer-Tropsch process. Powdered iron catalyst, after separation from reaction products, is recycled to fluidizers. Catalysis products are recovered, separated and purified by conventional methods.	Plant, in operation, cost $90-million and will produce 55-million gal./yr.
Gilsonite coke	Delayed coking	American Gilsonite Co. Bonanza, Utah, and Grand Junction, Colo.	Gilsonite will be hydraulically mined, transported in water suspension, dried, melted and coked in a delayed coker. Coker overhead will go to a catalytic reformer.	Coking plant in Colorado, 71 miles from mine, will produce 50% high-grade coke, 35% 86-octane gasoline, 15% fuel gas. To cost $16 million, handle 600–700 tpd. of gilsonite.
Hydrocarbon synthesis	Direct CO conversion	Rheinpreussen A. G. Homberg, Germany	Reaction, not fully understood, uses iron catalyst for liquid-phase combination of CO and water vapor in a single pass. With water-CO ratios of 1.5 to 3, 93% yield of CO, as mainly olefins, C_3 and heavier, was achieved. Claimed to improve on dry Fischer-Tropsch type synthesis.	Process was announced June 1955 at 4th World Petroleum Congress in Rome. Koppers Co. has licensing rights for Western Hemisphere and other areas.
Jet fuel	Catalytic cracking.	Socony Mobil Oil Co. Paulsboro, N. J.	Lower-pressure catalytic cracking in the presence of hydrogen made possible by new catalyst.	Commercially practical process will be used to produce a high-thermal-stability jet fuel.
Lubricating oil	Treating	Sun Oil Co. Marcus Hook, Pa.	New process uses hydrogen and a catalyst; low pressure, one reactor.	Commercial operation.
Lubricating oil	Phenol treating	Petroleo Brasiliero Brazil	Podbielniak centrifugal contacting equipment is used to replace towers.	M. W. Kellogg is handling design.

PETROLEUM & NATURAL GAS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Methane, synthetic	Catalysis		Conversion of hydrogen and carbon monoxide takes place over a partly extracted Raney-nickel alloy. Active catalyst is produced by removal of only 3–5% aluminum. Extracting additional small amounts of aluminum regenerates the catalyst.	Developed by Bureau of Mines.
Methane, synthetic	From lignite	StatGas & Electric Corp. Melbourne, Australia	Dried, briquetted lignite is fed to Lurgi generator, where it reacts with steam and oxygen. Hydrogen reacts with carbon to form methane.	Kellogg's plant, costing $22.5-million, will provide 18-million cu. ft./day of methane.
Methane, synthetic	Pressure hydrogasification		Process involves adding hydrogen to coal or oil during gasification. Methane is produced through control of temperature, pressure and catalysts.	Accomplished in the laboratory of the Institute of Gas Technology, process is ready for pilot plant tests.
Natural gas	Water washing	Shell Oil Co. Calgary, Alta., Canada	Water washing of natural gas containing 32–35% H_2S and 12% CO_2, at 500 psi., removes 80–90% of H_2S and 60% of CO_2 at low cost. Simple flashing releases H_2S from water.	300,000 cfd. pilot plant indicates 25% cost saving compared with ethanolamine absorption.
Olefins	Moving-bed coking	Farbwerke Hoechst A. G. Frankfurt, Germany	Coke pebbles indirectly heated in tubes are mixed with preheated crude or residual oil feed. Coke made forms in pebbles at 1,300 F. Gaseous reaction products are quenched, then fractionated.	Process produces 55% gaseous hydrocarbons, C_4 or lighter (58.8% olefinic) plus 38.2% liquid and 6.5% of coke, operating on crude oil. With residual oil feed, coke is higher, gaseous products less.
Petroleum	From oil sands	Can-Amera Oil Sands Development, Ltd. Calgary, Alta., Canada	Details not released. Experimental portable extraction unit is said to have produced satisfactory results. Process depends on centrifugation of oil sand suspension in a light oil.	
Petroleum coke	Generation of electricity	Public Service Electric & Gas Co. Essex, N. J.	This utility has contracted for 170 tons/day fluid coke to burn at its generating station. Coke comes from Esso's fluid coker at Baltimore.	Delaware Power & Light Co. intends to burn fluid coke in a new 50,000-kw. station.
Petroleum products	Radiation	Esso Research & Engineering Co. Linden, N. J.	Radiation of petroleum fractions under mild conditions gives accelerated reactions with higher yields than conventional processes.	In pilot-plant stage.
Refinery waste disposal	Bio-oxidation	Sun Oil Co. Toledo, Ohio	Flue gas stripping tower removes sulfides from refinery waste water. API separator removes oil and solids. Circulation through cooling tower permits biological action.	Beats high water costs and waste disposal pollution, provides emergency fire protection facility.
Refinery waste disposal	Oxidation of sulfides	Shell Oil Co. Wilmington-Domingues, Calif.	Pollution of waste waters by sulfides is eliminated by high-temperature air oxidation. Organic and inorganic pollutants are oxidized exothermically to thiosulfates.	Units handle 3,900 bbl./day.
Reformer catalyst	Recovery	Humble Oil & Refining Co. Baytown, Tex.	Size and density separation equipment and techniques used in food industry to separate seed products (grain, peanuts) are being used to separate active from inactive catalytic reforming catalyst.	Gives large reduction in Hydroformer operating costs.
Residual oils	Solvent fractionation		Solvent fractionation of residual oils with light hydrocarbons selectively precipitates undesirable constituents. Yield is an oil stock more suitable for catalytic cracking than vacuum-flashed stock.	Phillips has developed in the laboratory.
Residuum upgrading	Hydrodesulfurization	Gulf Oil Corp.	New catalyst said to have much improved hydrocracking activity compared with nickel oxide, makes possible desulfurization with H_2 of crude oil or heaviest oil fractions. Pressure less than 1,000 psig. Hydrogen-to-carbon ratio increased by (1) adding hydrogen and (2) decreasing carbon content.	Basic pilot plant work complete.
Shale oil	Retorting	Oil Shale Corp. Denver, Colo.	Shale is retorted in special ball mill, using counterflow of grinding balls heated by burning spent shale.	Process developed by Aspengren & Co. in Sweden. Pilot plant, to cost $100,000 and handle 1 ton/hr., will be operated by Denver Research Institute.
Shale oil	Retorting	Union Oil Co. Parachute Creek, Colo.	Union Oil going ahead with 1,000 tpd. of shale plant. Shale will be retorted near mine and crude oil coked. Coke distillate will be hydrogenated to remove sulfur and nitrogen, sent to Coast for normal refining.	Union figures that a full-scale plant, say 40,000 bpd., would cost $75-million for plant, $56-million for pipeline to Coast.

• Plastics, Resins and Rubber

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Foamed vinyls	Mechanical	Foam King, Inc. Bronx, N. Y.	Inert gas is whipped through a plastisol, blown through a nozzle and then fused. Entire process occurs at atmospheric pressure.	Moving into commercial production.
Furfuryl alcohol resin	Polymerization	T. F. Washburn Co. Chicago, Ill.	Furfuryl alcohol is heated with activated alumina. Resulting liquid is blended, cured to final resin. Avoids use of strong acid catalyst, water solvent, neutralization, washing, and drying, as with earlier processes.	Process developed by Armour Research Foundation, Chicago, offers wide range of products, from semi-solids to grindable solids. Being evaluated for plastic pipe.
Polyethylene	Low-pressure synthesis	Hercules Powder Co. Parlin, N. J., and others	At least nine U. S. firms studying process of Karl Ziegler, Max Planck Institute, Berlin. Process uses a metal alkyl complex catalyst and operates at temperatures and pressures close to atmospheric.	New product is more rigid, has higher softening point, than polyethylene made by conventional high-pressure process. Hercules' new plant will cost $10-million, produce 30 million lb./yr.
Polyethylene	Moderate pressure synthesis	Standard Oil Co. (Ind.)	Working on process believed to operate at about 1,000 psi. and 450-500 F. Catalyst may be subhexavalent molybdenum oxide.	Licensed to Eastman Kodak. Subsidiary Texas Eastman will build semi-commercial plant at Longview, Tex.
Polyethylene	Modified high-pressure	Imperial Chemical Industries England	A high-density polyethylene, its properties are between high-pressure and low-pressure products. Made in high-pressure equipment with modifications to catalyst and processing equipment.	Development quantities are being produced.
Polyethylene, irradiated	Irradiation	American Agile Corp. Cleveland, Ohio	Company is now fabricating process equipment, e.g., evaporators, from irradiated polyethylene which will withstand 350 F.	
Polyethylene, modified	Blending mineral wax	.....	Synthetic microcrystalline mineral waxes are added in various proportions to polyethylene. Waxes contribute to rigidity, reduce transmission of gases and vapors through the plastic.	Reported in a West German journal.
Polyethylene, modified	Modification, irradiation	Sequoia Process Corp. Redwood City, Calif.	Chemical modification plus irradiation by electron beam results in product resistant to elevated temperatures.	Polyethylene-coated wire being produced commercially.
Polyethylene, modified	With carbon black	General Electric Co.	Carbon black or other fillers added to irradiated polyethylene increase its tensile strength at high temperatures and reduce creep formation. Low-temperature flexibility, chemical resistance and non-melting are other characteristics gained.	
Polymers, various	Radioisotope radiation	Various	Experimental uses being reported from various sources on use of radioisotopes in catalyzing polymerizations, or in reducing temperature and pressure requirements with present catalysts.	Appears to have advantages over other forms of radiation in speeding some reactions. Can make some polymers never before made, makes others (e.g., polyethylene) under less severe conditions. Can vulcanize rubber without sulfur.
Polypropylene	Catalytic polymerization	Hibernia Germany, and others	Ziegler low-pressure polyethylene process is being adapted to polymerize propylene. Product has high melting point (150 C.), resistance to solvents. Potential uses as film and fiber.	Hibernia has 1 ton/day pilot plant. Julio Natta doing further research at Milan Polytechnic Institute under Montecatini sponsorship. Many U. S. firms conducting studies.
Polyurethanes	From isocyanates	Various	Reaction of diisocyanates with polyesters produces polyurethanes in various forms, such as foams, adhesives, rubber, protective coatings.	Du Pont, Mobay and Allied have boosted isocyanate capacity to supply a large number of polyurethane producers.
Polyvinyl chloride	Light-stabilizing	Monsanto Chemical Co.	New light-stabilizing system is made up of four parts: (1) barium-cadmium salts of organic acids; (2) an epoxidized soybean oil; (3) anti-oxidant; (4) an unidentified organic additive.	System should increase market for PVC, improves sunlight and weathering resistance.
Polyvinyl chloride	Suspension polymerization	General Tire & Rubber Co. Ashtabula, Ohio	Process uses less than 1% PVA as suspending agent, plus benzoyl, acetyl and lauryl peroxides as catalysts. These, mixed with vinyl chloride monomer and water are polymerized batchwise in a jacketed reactor.	Process offered by Scientific Design Co., New York. Claimed to be an improvement over earlier process, giving more versatile product than conventional emulsion process.
Resin impregnation	Ultrasonic	.....	Ultrasonic impregnation of cloth, paper with resin varnish is cheap method of electrical insulation preparation. Sound waves are beamed through liquid pregnant, material to be treated dipped into liquid at right angles to ultrasonic beam.	Under laboratory study by General Electric Co.

PLASTICS, RESIN & RUBBER, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Resins	Continuous		Pipeline reactor is used for thermally sensitive resins. This is followed by a continuous vacuum dehydrator and a continuously moving metal plate on which the resin is poured. Finished resin is chipped continuously from the plate.	Developed by General Electric Co.
Rubber, reclaimed	Continuous	B-I-F Industries Providence, R. I.	Problems of accurate proportioning and feeding of crumb rubber, oxido-plasticization agents and softening oils have been solved. Process cuts reclamation time from 10 hr. to a few minutes.	Ready for commercial operation.
Rubber, vulcanized	Gamma radiation	Air Research & Development Command Baltimore, Md.	Claimed to replace heat vulcanization, giving superior products for specialized rubber uses.	Believed still in laboratory stage.
Silicone paint		Army Corps of Engineers	Paint withstands up to 1,400 F. It is a blend of ceramic frits, pigments and refractories at pigment volume concentration of 35–40%, with frit-to-pigment ratio of 3:1	Commercially available.
Silicone rubbers	Modified with Teflon		Addition of Teflon to silicone rubbers improves their tear resistance and resistance to oven aging without affecting their other characteristics.	Developed at Frederick S. Bacon Lab
Synthetic rubber	Oriented isoprene polymerization	Goodrich-Gulf Co. Avon Lake, Ohio	Because of the oriented polymer produced by this process the synthetic rubber closely resembles natural hevea rubber. Orientation is accomplished during propagation phase of the reaction.	Commercial plant is being built. Firestone, Goodyear also report similar processes in development stage.
Vinyl foam	Mechanical foaming	Brown Rubber, Goodyear, General Tire, others	Continuous foaming equipment meters a vinyl plastisol and an inert gas accurately, simultaneously and under pressure; mixes and cools the two; continuously discharges foam into molds.	Developed by Elastomer Chemical, process is licensed to 25 outfits.

• Pulp & Paper

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Dimethyl sulfide	From kraft liquor	Crown-Zellerbach Co. Camas, Wash.	Sodium sulfide is added to spent kraft digester liquor in proportion to concentration of methyl groups present. After reacting at 480 F. and 600 psi. the mixture is flashed and condensed to recover dimethyl sulfide.	A 2-million-lb. per year pilot plant will cut tankcar prices from 23 to 15¢ per lb.
Kraft mill odor elimination	Trapping, chlorination	Weyerhaeuser Timber Co. Everett, Wash.	Vaporsphere system consists of a 25-ft. dia. steel sphere covering a leak-proof plastic diaphragm. Sulfur gases released from digester are trapped here, then drawn off slowly and mixed with chlorine.	New installation has cut by 90% objectionable odors remaining after off-gases are condensed.
Kraft mill waste disposal	Bio-oxidation	West Virginia Pulp & Paper Co. Covington, Va.	First activated sludge plant to treat pulp mill wastes reduces BOD of 16–24 million gal./day from 140 ppm. to 15 ppm. Only nutrients needed for activated sludge organisms are 2 ppm. phosphorus as H_3PO_4 and 4 ppm. nitrogen as NH_3.	
Kraft pulp	Continuous cooking	International Paper Co. Camden, Ark.	Kamyr continuous cooking process is claimed to be capable of producing a more uniform pulp vs. that made by batch systems. Takes less labor and space.	Developed by Kamyr in Sweden. International's new unit has 150 tons/day capacity. Other units are under construction in U. S.
Nitrate pulp	Nitric acid digestion		New French Delbay process claimed to pulp any kind of cellulose in 3–4 hr. with 30 Bé. HNO_3 at room temperature and pressure. Neutralization and bleaching follow digestion. Claim 50% pulp yield from most raw materials. HNO_3 selectively attacks lignin with little effect on cellulose.	20-ton demonstration plant being built in France. Expect investment to be $35,000 per daily ton. Process offered in U. S. by Council on Public Relations, New York.
Paper	Air felting	Fibrofelt Corp. Chicago, Ill.	Air-borne fibers are deposited from a cylindrical head onto a moving wire screen. Process claims low capital investment, able to handle many types and sizes of fibers.	In development stage.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Paper	De-inking		Paper is shredded, put in water and the ink is removed by the addition of a detergent and salt. The mix is heated, an electric current is passed through to increase separation of ink from cellulose. Result: Product claimed to be as good as virgin pulp.	Developed at the University of Texas.
Paperboard	Multilayer	Crossett Co. Crossett, Ark.	First operation to take combination of Kraft pine pulp and hardwood pulp by semi-chemical method to make laminated-type food board. Process uses cylinder instead of Foudrinier machine.	On stream April 1956 at a cost of $16 million.
Paper, coated	Electrostatic	Bergstrom Paper Co. Neenah, Wis.	Coating material is charged electrically and deposited on paper web with strong electrostatic fields.	Developed by Battelle Memorial Institute, Columbus, Ohio.
Paper stock, cleaned	Vacuum-deaerator	Numerous	In Deculator-Cleaner process, dilute paper stock is sprayed into vacuum receiver, then goes into centrifugal separator. Process removes both air and dirt from stock.	Developed by Rotareaed Corp., in cooperation with Bauer Bros. Co., Springfield, Ohio.
Pine gum rosin	Continuous distillation	Pine Chemicals, Inc. Trenton, N. J.	Continuous steam still gives better product, shorter process time in distillation and refining of pine oleoresin. Crude gum, filtered and washed, has turpentine flashed off. High-quality rosin is tapped from bottom of 30-ft.-high still.	Commercial operation.
Sulfite liquor disposal	Zimmermann	Aktieselskapet Borregaard Oslo, Norway	Spent pulping liquor is charged to closed reactor. Inorganic and organic chemicals are oxidized with air at 800 psi. and 500 F. Process supplies steam, eliminates stream pollution, recovers inorganic pulping chemicals.	First full-scale commercial trial will be $3-million plant capable of handling waste liquor from 500 ton/day mill.
Sulfite pulp	From pine pulpwood	Stora Kopparbergs Bergslags AB Skutskar, Sweden	Tough-to-impregnate pine is now successfully pulped by two-stage process based on highly soluble sodium bisulfite. Bisulfite-lignin reaction is made faster by high concentration of bisulfite ions.	Mill operating at rate of 120 tons/day. American manufacturers interested in adaptability to various woods.
Sulfite pulp	Quick cook	United Paper Mills Ltd. Valkeakoski, Finland	Cooking time is cut 30% without loss in quality.	Commercially proved. Conversion of several other mills underway.

• Textile Fibers

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Acrylic fiber	From acrylonitrile	Tennessee Eastman Co. Kingsport, Tenn.	Verel is an acrylic fiber, probably half acrylonitrile and half vinylidene chloride. Under wraps, it is known that Eastman has been evaluating an M-series of fibers for years.	Plant under construction.
Dinitrile fiber	From vinylidene cyanide	B. F. Goodrich Co. Avon Lake, Ohio	New synthetic fiber, known as Darlan, is believed to be spun filaments of vinylidene cyanide polymers. Material is hard, tough, clear, resistant to heat and chemicals.	In pilot-plant stage. First commercial use is in women's pile coats.
Nylon	From polyoxamides	Du Pont	Nylon-related polyoxamide can be spun into textile fibers. Results are better textile properties, fiber that is cheaper to produce.	In research stage.
Nylon-6	Via caprolactam	Allied Chemical & Dye Corp., National Aniline Div. Chesterfield, Va.	Process route is benzene, phenol, cyclohexanone, (plus hydroxylamine) cyclohexanone oxime, to caprolactam. Monomer is polymerized to Nylon-6.	Product, now made as molding powder, will also be supplied as textile fiber competitive with conventional nylon.
Synthetic fabric	From Dacron and Hypalon	DeBell & Richardson Hazardville, Conn.	Dacralon is made from the polyester Dacron and the chlorosulfonated polyethylene Hypalon. It is 50% lighter than existing fabrics and has high strength-to-weight ratio.	Air Force is interested in the material for radar shelters.
Synthetic fibers	Polymerization	Gevaert Photo-Production Co. Belgium	Polymers made by reaction between hydroxylamine and polyacrylonitrile in the presence of dimethyl formamide can be produced as fibers that can be dyed readily and inexpensively.	
Vinylon	Irradiated		A polyvinyl alcohol fiber, Vinylon will not dissolve in water, will stand severe ironing because of radiation treatment. Deuteron bombardment from cyclotron or gamma rays from cobalt-60 source irradiate material to 400 million roetgen at 250 F.	Has wet-heat resistance of 300 F, resists cyclohexane solvents. Now only made in Japan.

• Miscellaneous Technology

OPERATION	EQUIPMENT	USER & LOCATION	FEATURES	STATUS & REMARKS
Adsorption	Fluidized adsorbent		Contactor similar to bubble-cap column gives stagewise contact between fluidized adsorbent char and gas mixture to be separated. Claimed to give extremely good separation of light from heavy hydrocarbon vapors.	Developed by Esso Research & Eng. Co., New York. Offered for license by Stone & Webster Eng. Co. Claimed suitable also for solvent recovery, hydrogen purification. Called Fluid Char Adsorption.
Adsorption	Synthetic zeolites		New line of adsorbents with controllable fine pore sizes can be used for separations in the range of 4 or 5 Angstroms molecule size. Can be used, for example, to separate CO_2 or acetylene from propane or higher *n*-paraffins, or polar from non-polar compounds.	Developed by Linde Air Products Co. Called "Molecular Sieves." Not harmed by high temperatures and so are easily reactivated.
Air-pollution abatement	Smokeless flare	Esso Standard Oil Co. Linden, N. J.	Smoke eliminated by injecting water into combustion zone; water pressure raised from 0 to 33–58 psig.	Successful operation on 150,000–250,000 scfh. of gas.
Air-pollution control	Fluorescent tracer	Ralph M. Parsons, Co. Los Angeles, Calif.	For studies of Los Angeles smog problems, Parsons is using fluorescent powder dispersed into air and collected at various points on special filters. Study of filters under ultraviolet shows where pollutants go.	Process developed at Stanford Research Institute. Tracer use of fluorescent dusts has advantages over radioactive tracers where large areas are to be covered.
Air-pollution control	Wind-tunnel model	New York University New York, N. Y.	Scale model of existing or proposed plant is tested in special wind tunnel to observe patterns of effluent dispersion in atmosphere.	Kaiser's new fume-disposal system at Chalmette, La., aluminum plant was tested via this technique.
Coal slurry transport	Pipeline	Pittsburgh Consolidaed Coal Co. Cadis, Ohio	Pipeline under construction to move coal slurry from Cadis, Ohio, 110 mi. to Cleveland at rate of 1.2 million tons/yr.	Pitt-Consol plans to expand project if freight rates remain high.
Counting airborne particles	Electronic		As airborne particles pass through instrument, they are diluted and the flow rate is controlled. Each particle is illuminated and reflection detected on photomultiplier tubes. Size is also determined, since large particles reflect more light than small. Particles from 1 to 64 microns can be detected.	Developed by Army Chemical Corps, Camp Detrick, Md.
Data reduction	Digital loggers	Esso Standard Oil Co. Bayway, N. J.	Digital loggers automatically record large volume of operating data from 100 or more instruments.	Equipment developed by Fischer & Porter, Beckman Instruments, others. Other installations being made.
Descaling thermocompression stills	Thermocompression evaporators	U. S. Army, Engineer Research & Development Labs. Fort Belvoir, Va.	Anti-scaling studies have shown that frequent descaling with citric acid will maintain clean evaporating surfaces indefinitely.	Studies also show that use of brine stabilization equipment can minimize descaling needs.
Drying	Superheated vapor dryer	Middle West, U. S.	Exclusion of air from normal air dryer, with recirculation of superheated vapors from drying materials at atmospheric pressure, shows considerable operating cost saving, with approximate doubling of drying capacity compared to air drying.	Initial installation, built by Wyssmont Co., L. I. City, N. Y., operates on micron-sized inorganic material. Expect many granular products to be suitable for this technique.
Electric power generation	Cold combustion		Process produces electricity without intermediate boilers, turbines or generators. Oxygen at 22 psia. diffuses through a porous coal cylinder, reacts with KOH electrolyte to form hydroxyl ions. They migrate to and react with hydrogen as it diffuses through a porous nickel cylinder.	In laboratory stage in W. Germany with application research being pushed.
Electric power generation	Oxy-hydrogen cell		Galvanic cell with nickel electrodes generates electric current from reaction of oxygen and hydrogen in KOH electrolyte. Much lighter than conventional lead-acid cells.	Developed in Britain.
Electric power rectification	Silicon rectifier		Operates at 98% efficiency up to 200 C., whereas germanium rectifier is inefficient above 60 C.	Developed by Westinghouse Electric Corp.
Fire protection	Unstable foam	Carbide & Carbon Chemicals Co. Charleston, W. Va.	1-2% Unox in water produces unstable foam that clings to burning materials. Foam breaks at 175 F., releases water as needed.	Large-scale tests have been successful.
Gas filtration	Wetted fiber bed	Harvard School of Public Health Boston, Mass.	99.9% collection efficiency obtained with Saran fibers filtering gaseous fluorides.	Experimental.
Heating small reactors	Fluidized solids bath	Esso Laboratories Baton Rouge, La.	Use of fluidized solids heating gives good control of reactor temperatures up to 1,600 F.	Pilot plant.

OPERATION	EQUIPMENT	USER & LOCATION	FEATURES	STATUS & REMARKS
Heat transfer surface forming	Bonding rolls.....	Olin Mathieson Chemical Corp. East Alton, Ill.	Combination of stop-welding, bonding and hydraulic pressure makes it possible to create any tubing pattern within a single sheet of metal (Al, Cu, Cu alloys, stainless steel) that can be roll bonded.	Mass production plant in construction.
Ion exchange.....	Continuous slug-purging column	Peterson Filters & Eng. Co. Salt Lake City, Utah	Resin transfer cycle begins with opening of purge valve to admit pregnant liquor. Slug is swept out by liquor, flows to resin loader of next column. Simultaneously regenerated resin slug is introduced to resin loader at top of column.	In pilot-plant stage. Strong interest by Du Pont, Dow, others.
Ion exchange.....	Continuous.....	.....	Several designs of continuous contractors for ion exchange are in laboratory stage using plugflow, pulsed beds, continuous belts of exchange materials and the like.	Work has been reported mainly from AEC, colleges, research institutes. Main problem is that plug flow is necessary except for very favorable equilibrium conditions.
Irradiation.....	Mobile nuclear reactor	.....	Nuclear reactor mounted in boxcar would provide ionization source for catalyzing chemical reactions.	Idea proposed by Brookhaven National Laboratory.
Liquid-liquid extraction	Liquid carbon dioxide	Socony Mobil Oil Co. Paulsboro, N. J.	Low cost and unusual miscibility relations indicate usefulness in separating hydrocarbons.	Laboratory development.
Liquid-liquid extraction	Rotating-disk contractor	Shell Oil Co., and others Various	Rotating shaft centered in vertical column carries a number of disks; stationary doughnut rings form series of compartments. High capacity, low H.E.T.S., flexible in operation, easy to maintain.	Several commercial installations in petroleum and chemical operations. Developed by Shell, licensed to Lummus Co. and Turbo Mixer Div. of General American.
Mechanical separations	Filter.....	Salt Lake Tungsten Co. Salt Lake City, Utah	Modified plate and frame filter has two circular frames for each position secured together 180° apart so one can be swung out to clean while other is filtering.	Eliminates down time for cleaning. Developed by Blair Burwell of Salt Lake Tungsten. Made by Elmco Corp., Salt Lake City.
Mechanical separations	Liquid cyclone.....	.....	Small diameter cyclones in 10 and 15 mm. diameters developed for separations in 2–20 micron range. Use 24 or 32 units in parallel. One type has plastic tubes, other is cast en bloc in rubber.	Developed by Dorr-Oliver, Inc., called Type TM cyclones.
Mixing, dispersion...	Saw-toothed disk stirrer	.....	Flat saw-toothed stirrer builds up strong hydraulic shearing action to produce sodium dispersions.	Developed by Cowles Dissolver.
Mixing, high-frequency	Mechanical Polytron mixer	.....	Developed by Prof. P. Willems, of Soleure Switzerland, and used fairly widely in Europe, mixer exerts shear, shock, impact and attrition at frequencies to over 200,000 cycles/sec.	Claimed to accelerate various reactions such as paper pulping, varnish making, with remarkable decrease in time for completion.
Nuclear energy production	Carbon fission reactor	.....	Would increase by at least 8,000 times the usable energy from carbonaceous fuels.	Highly speculative, but reported to be encouraged by military sources. Proposed by Harry Hardaeg. Fairchild Engine & Airplane Corp. said to be backing investigation.
Nuclear energy production	Diphenyl-moderated reactor	Atomic Energy Commission Ames, Idaho	Experimental reactor capable of generating up to 15,000-kw. of heat is to be moderated and cooled with diphenyl. Coolant has low induced radioactivity, low corrosion of fuel elements, high boiling point.	Trial is slated for 1957.
Nuclear energy production	Liquid-metal-fuel reactor	.....	Dilute solution of uranium-233 in molten bismuth rises in temperature passing through graphite-moderated core, gives up energy to liquid sodium in tubular exchanger. Hot sodium generates steam for power production.	In laboratory stage, developed by Brookhaven National Laboratory. Estimated cost for 200-mw. station is $44 million, power cost 7.5 mills/kwh.
Nuclear energy production	Nuclear reactors....	Government of Great Britain	Total of 12 power reactors to be built in 10 years for 1.5–2 million kw. capacity. Program will cost $840 million.	Many feel this crash program will put Britain far ahead in atomic power development.
Nuclear energy production	Seven reactor types.	AEC-industry Various	In early 1954 AEC announced a 5-year power reactor development program to build and test six prototype reactors of five types, including pressurized water, boiling water, sodium-cooled graphite-moderated, breeder, homogeneous.	More recently it has been decided also to test the liquid metal fuel reactor and the hydrocarbon moderated reactor.
Nuclear energy production	Various reactor types	.....	Six private projects for industrial power from atomic fission have been announced, pending AEC approval. These include Consolidated Edison; a New England group; Commonwealth Edison and several others; Detroit Edison and several others; a Nebraska cooperative; a Minnesota cooperative.	

MISCELLANEOUS, continued

OPERATION	EQUIPMENT	USER & LOCATION	FEATURES	STATUS & REMARKS
Nuclear equipment shielding	Ferrophosphorus concrete	Battelle Institute, Knolls Atomic Power Lab, and others	Ferrophosphorus produces a higher density concrete (300 lb./cu. ft.) than most materials. This permits it to be mixed with portland cement and water in ordinary mixing equipment.	In development and test stage.
Plant design.....	Photographed models	.....	Photograph of scale model is dimensioned and used as engineering drawing. Technique utilizes preformed components, magnetically mounted equipment.	Photographic techniques available for licensing. Offered by Parco Co., New York.
Process steam analysis	Continuous dielectric analyzer	Gulf Oil, Shell, Humble Oil	Continuous analysers pick up differences in dielectric constants of process steams. These monitors are aiding to automate petroleum refineries.	In commercial refineries.
Pumping.....	"Canned-rotor" pumps	Atomic Energy Commission, others	For nuclear power installations, several "canned-rotor" pumps have been developed by concerns such as Westinghouse, Byron Jackson, Allis-Chalmers. Such motors have no packed shafts, hence no leakage.	Smaller scale "canned-rotor" pumps for chemical plant service being put out by Chempump, Philadelphia.
Radiation-induced reactions	Gamma radiation (Cobalt-60)	Standard Oil Development Co. Linden, N. J.	New $250,000 laboratory opened in April 1955. Object is to investigate the possibility of using gamma radiation for the purpose of inducing cracking, polymerization and other reactions without or with reduced catalysts and lower temperature and pressure.	If initial success is indicated Esso may spend $5-20 million on this research.
Separation, analysis..	Gas-liquid partition chromatography	Shell Chemical Corp. Houston, Tex., and others	Mixture to be analysed is passed through column containing a solvent (e.g., diethylene glycol) adsorbed on an inert solid (e.g., diatomaceous earth). Any pure compound passes through column at speed determined by its "partition coefficient."	Widespread use as analytical laboratory tool. Shell is applying to production line control.
Solar energy conversion	Solar battery.....	Wright Air Development Center Dayton, Ohio	New solar battery converts solar energy to electricity through crystal cadmium sulfide. The barrier layer cell consists of a positive electrode of silver on one side of the cadmium sulfide crystal and a negative electrode of indium on the other.	Developed by WADC. In pilot model, 1/8-sq. in area produced 1/3 volt.
Solar heating (high temperature)	Solar furnace	Consolidated Vultee Aircraft Corp. San Diego, Calif.	8,500 F. temperature for material testing is attained by parabolic reflectors 120 in. in diameter, concentrating solar radiation. Being used to test metals and ceramics.	Gives highest temperatures regularly available at present.
Solids processing....	Multistage fluid bed	Atlas Building Products Co. El Paso, Tex.	Net movement of fluidized solids is horizontally across the vertically moving gas stream, which makes possible stagewise processing zones of operation.	In commercial operation. Designed by W. G. Bauer, Seattle consultant.
Sterilization.....	Electron beam.....	Bradley Container Corp. Maynard, Mass.	Plastic containers, either filled or empty, are sterilized with beam from 2-million-volt particle accelerator.	In commercial operation.
Thermal diffusion....	Horizontal column..	.....	Earlier work was with vertical, rather than horizontal, columns. Now using membranes, in conjunction with thermal gradient, to separate types of molecules.	Laboratory work at Univ. of Tennessee.
Thermal diffusion....	Permeable membrane	.....	Departing from usual vertical thermogravitational columns this device employs a permeable membrane sandwiched between horizontal channels in the hot- and cold-wall surfaces. It gets increased separation efficiency, greater process control, separates formerly inseparable mixtures.	Developed by S. H. Jury at the University of Tennessee.
Thickening.....	Mesh stirrers.....	.....	French Geisol process said to improve thickener operation by use of lattice or mesh stirrers moving at very slow speed in thickener compression zone. Can be installed in conventional thickeners.	Claim increase in density of thickener underflow, e.g., 20% on bauxite mud, at same throughput rate; or 75% higher throughput at same concentration. Offered in U. S. by Chemical Projects Associates, New York.
Weld testing.....	Radioactive cobalt..	National Supply Co. Toledo, Ohio	Cobalt-60 provides gamma-ray source equivalent to radium at fraction of cost. X-ray film is wrapped around weld, cobalt-60 is put in position and penetrometers pick up dark spots that mean defects in welds.	In commercial use, testing welds up to 2½ in. thick.

OPERATION	EQUIPMENT	USER & LOCATION	FEATURES	STATUS & REMARKS
Wood laminating....	Radiant heater.....	Potlatch Forests, Inc. Lewiston, Ida.	Upgrades inferior lumber, offers wider use of phenolic resin adhesives. Nozzle-type glue spreader coats the surfaces and 60 sec. in a 200-psi. press makes the joint.	In pilot-plant stage.
Wood preserving....	Double diffusion....	.....	Posts are treated first with copper sulfate solution, then with sodium chromate solution. The two chemicals diffuse into the wood, react to form copper chromate, which is toxic to fungi, insects.	Developed by Forest Products Laboratory, U. S. Dept. of Agriculture, Madison, Wis.

TECHNICAL LITERATURE

PROCESSES AND TECHNOLOGY

Ammonia Production, Synthetic.....How high yields, low operating costs, and flexibility of plant design can be obtained in the production of synthetic ammonia is the subject of a new 12 p. illustrated booklet.
69A M. W. Kellogg Co.

Ammonia Synthesis.....Ammonia production at Grace Chemical goes "over the top" with exclusive FW sequence. For complete information on Grace plant installation, request March-April 1956 "Heat Engineering."
69B Foster-Wheeler Corp.

Atomic Energy Industry.....44 p. "The Atom in Our Hands" describes unique process used to separate billions of uranium atoms to capture rare type of uranium 235 needed for atomic energy operations. Illustrated.
69C Union Carbide & Carbon Corp.

Atomic Terms.....After a recent talk by Eger V. Murphree on "The Atom in Peace," it was suggested that the company publish a glossary on atomic energy. Illustrated, 22 p. booklet defines 101 frequently used terms.
69D Esso Research & Engrg.

Brine-Making Process.....Presents a 32 p. fully illustrated reference, "Brine for Today's Industry," which covers the Lixate Process ... a revolutionary system for marking and handling better brine at lower costs.
69E International Salt Co.

By-Product Recovery.....Blaw-Knox is prepared to help you solve any by-product or industrial waste recovery problem you may have. A valuable reference on By-Product Recovery is available. Catalog 351.
69F Blaw-Knox Co.

Commercial Development ..... Involves establishing a product, a process, markets & raw materials. It requires an integrated program. Illustrated, 4 p. Folder describes the work ADL performs along these lines.
69G Arthur D. Little.

Coordinated Precision Technology..... The highly advanced technological products designed & manufactured by 18 producing companies of GPE Corp. serve more than a dozen major industries. Request Brochure.
69H General Precision Equip. Corp.

Electrolytic Regeneration of Spent Pickling Solutions.....Reprint presents results of a laboratory investigation of a proposed process for electrolytic regeneration of spent sulfate pickling solutions.
69I Mellon Institute.

Flotation.....More large plants are installing "Sub-A's" for entire flotation job, because they give maximum recovery at a low cost per ton. Dependable, simplified continuous operating. Bulletin No. F10-B81.
69J Denver Equipment Co.

Indexes, Multidimensional.....The Uniterm Index, first multidimensional index ever devised, enables you to stay on top of the ever-growing mountain of published chemical plant information and details. Illustrated, 4 p.
69K Information For Industry.

Laboratory Service.....Reference describes the Rietz Laboratory Service: size reduction; continuous mixing and dissolving; heat exchange. Briefly describes product line. Request Bulletin No. 200.
69L Rietz Mfg. Co.

Patent Abstract Service.....Service keeps users continuously informed on all patents issued in any designated field. It is prompt, complete and photographically accurate. Request further information.
69M Picturesort Co.

Process, Hydride ..... Company announces the availability upon request of a 24 p. booklet, "The Hydride Process." It furnishes brief descriptions of each MH product with applications, properties, handling, etc.
69N Metal Hydrides.

Processes, Corrosion ..... Engineering services mame available: project and application engineering: installation & instruction of personnel & fabrication & delivery. Request 1956 Buyer's Guide.
44 *Pfaulder Co.

Processes, Fat & Oil.....Describes fat and oil processing for fat splitting, fatty acid distillation, hydrogenation, esterification, oil bodying, etc. For complete details, request Bulletin ID-49-12.
31i *Foster Wheeler Corp.

Processes, Steam-Pyrolysis.....Process allows refiner to dispose of marginal products by economically converting natural gasoline, residuals or other low value materials to ethylene and olefins. Illustrated, 8 p.
69O M. W. Kellogg Co.

Processing, Continuous.....Describes distinguishing characteristics, capacities & applications of Dorr-Oliver equipment available & outlines scope of D-O technical services. Illustrated Bulletin No. 7002.
69P Dorr-Oliver, Inc.

Project Engineering.....Pfaudler designs and equips a system to hold 4 different solutions to within 1° F. of a predetermined temperature. Typical of project engineering now offered. See Bulletin 511.
69Q Pfaudler Co.

Reformate Production.....The economic advantages of Kellogg naphtha reforming process using Sinclair-Baker platinum catalyst for production of low cost, high octane reformates are described in illustrated, 8 p.
69R M. W. Kellogg Co.

Research.....“Rensselaer Research” reviews status of current research at the Institute & offers thumbnail sketches of the men directing some of the newer projects. Features story on “Petroleum Jellies.” Vol. 1 No. 1.
69S Rensselaer Polytechnic Inst.

Research & Development.....“Scientific Analysis of Flavor & Odor” tells how Evans can work for you in developing new products, in controlling the processing of existing products to assure uniformity, etc.
69T Evans Research & Develop.

Screen Processing on Plastics..... “Screen Process Printing on Plastics” is the subject of a new Technical Service Bulletin. Describes equipment, procedures, and paints used in screening on plastics. 5 p.
69U Logo, Inc.

Surface Chemistry.....New applications predicted for surfactants—describes new role of surface chemistry in modern technology in booklet, “Explore, Expand & Diversify with Surface Chemistry at Foster D. Snell.”
69V Foster D. Snell, Inc.

Tables & Data.....112 p. contains selected chemical & physical, engineering, plastics, bacteriological, leather, psychometric & textile tables & charts. Standard formulae, charts & definitions in concise form.
69W United States Testing Co.

Testing Facilities.....“Teco Testing Facilities for Wood & Wood Products” shows Teco Laboratory's methods & facilities used in developing ideas & establishing performance qualities of new & improved products.
69X Timber Engrg. Co.

Testing Laboratory, Mobile, Ore..... Compact unit provides facilities for sampling, testing, development of flowsheets for mills, tailings dumps or new deposits. For details, request illustrated Bulletin No. LG3-B11.
69Y Denver Equipment Co.

Urea Process, Pechiney.....Low cost, minimum corrosion process ... features a neutral oil circulating medium for recycling of unconverted ammonia-carbon dioxide. Details available in Bulletin No. 0-54-3.
31h Foster Wheeler Corp.

Waste Treatment, Industrial.....Verti-Flo is designed to fit the needs of industries faced with the problem of plant water clarification, process water reclamation, or valuable materials reclamation. Bul. 315-92.
69AA Chain Belt Co.

Waste Treatment, Industrial.....A technical report describes several practical systems for process and waste water treatment utilizing controlled volume pumps to meter chemicals and additives. Tech. Paper No. 64.
69BB Milton Roy Co.

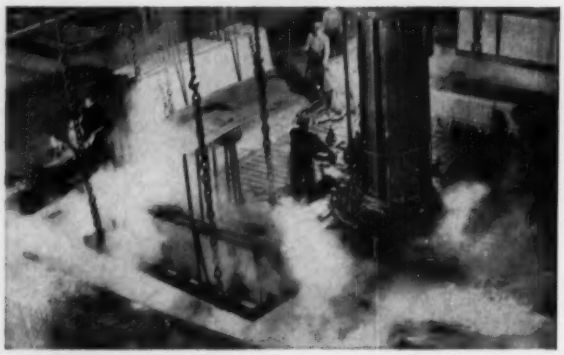
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69CC Gale Separator Co.

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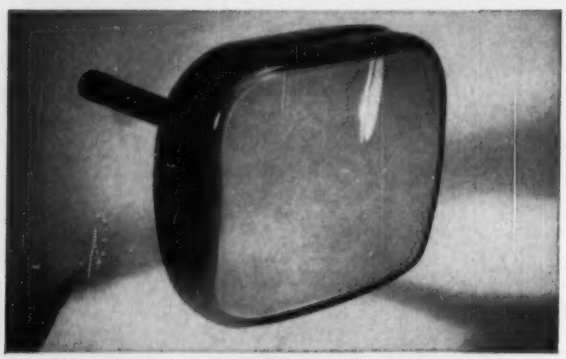
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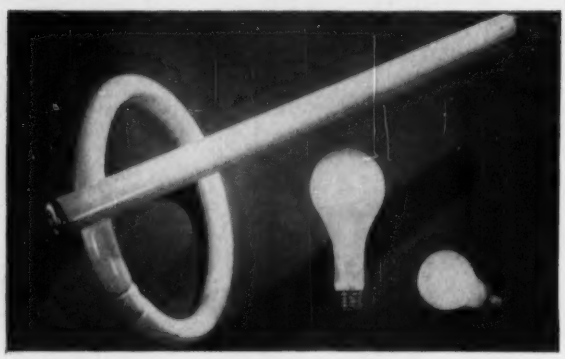


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1956

1 INVENTORY

Plants . . . . . [redacted]

Processes . . . [redacted]

New CHEMICALS . . [redacted]

Equipment . . [redacted]

Indexes . . . . [redacted]

209 PRODUCTS . . . CE's inventory of new chemicals and materials . . . carefully screened for their specific interest to chemical engineers in industry . . . properties, uses, where you can get them now.

HERE'S CE's third annual inventory of new chemicals and materials. It includes 209 new or newsworthy items of practical interest to chemical engineers. It is not a listing of research, specialty or consumer products. All material in this inventory has been carefully screened by our editors for publication in the August 1954—July 1956 issues of CE. For more information on any item, write its code number on one of the Reader Service postcards, then mail to us.

1956

New Chemicals and Materials

INVENTORY

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Miscellaneous chemical products 111
New technical literature 120
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• Agricultural Chemicals

Disinfectant, Seed

In liquid form. (72A)

. . . Ceresan, organic mercurial seed disinfectant, is marketed in liquid form in varying concentrations. Formulations not only retain fumigating and residual action of dry compound, but also offer convenience of liquid and safety factor of a dye which colors treated seed. Liquids won't corrode machinery.—*E. I du Pont de Nemours & Co., Inc., Wilmington* 98, *Del.*

Dressings, Seed Mercurial

Mercurial compounds. (72B)

. . . Three new organic mercurial seed dressings are Puraseed, Gallotox and Gallotox-51. Puraseed is a combination of special organic mercury compound and an organic cadmium compound. It's non-volatile, can be used as a slurry or dust. Gallotox is a non-volatile liquid; Gallotox-51 is a volatile liquid.—*Gallowhur Chemical Corp., Ossining, N. Y.*

Fertilizer

Long lasting. (72C)

. . . Uramite fertilizer combines a high nitrogen content (38%) with a unique, prolonged, uniform release rate which meets—in one application—the nitrogen needs for an entire growing season. Only about 10 lb. per 1,000 sq. ft. are required to produce a more durable, attractive turf.—*E. I. du Pont de Nemours & Co., Inc., Wilmington* 98, *Del.*

Fertilizer, Nitrogen

"Slow release." (72D)

. . . Borden's 38 is a nitrogen fertilizer containing 38% nitrogen with no phosphorus or potash added. It's non-burning, will release nitrogen steadily for periods from 6 months to a year. 15-18 lb. will serve 1,000 sq. ft. area of turfgrass per season.—*Borden Co., New York* 17, *N. Y.*

Fungicide, Apple

Controls rust, scab, gives fine finish. (73A)

. . . Thylate thiram fungicide (based on thiram, one of the dithiocarbamate fungicides) offers outstanding fruit finish, excellent control for apple scab, good control of cedar-apple rust. Where used as the only fungicide in the spray schedule, it harms neither foliage nor fruits. Thylate thiram fungicide is also being studied for control of diseases on other fruits and certain vegetables. Recommended dose for apples: 1½-2 lb./100 gal. of spray.—*E. I. du Pont de Nemours & Co., Inc., Wilmington* 98, *Del.*

Herbicide

Stunts weed growth. (73B)

. . . Aminotriazole, accustomed to limited use in a special process for photographic film manufacture, looks promising as a high powered herbicide. Tradenamed Amizol, it works by interfering with a plant's chlorophyll supply, stunting growth and sickening susceptible weeds. It's aimed at combatting Canada thistle, duck grass, nutgrass and brush plants like ash, red maple, poison ivy.—*American Chemical Paint Co., Ambler, Pa.*

Insecticide

First systemic to win FDA approval. (73C)

. . . Systox, a trialkyl triophosphate, is the first systemic insecticide to gain approval from the Food and Drug Administration. It won't wash off because it's absorbed into the plant itself whether it be sprayed on the leaves or poured in a week solution around the roots. It should prove a boon to a variety of produce growers, including truck gardeners, orchardists, commercial growers.—*Pittsburgh Coke & Chemical Co., Pittsburgh, Pa.*

Insecticide, Phosphate

First systemic effectively applied to seeds. (73D)

. . . Thimet systemic insecticide can be applied to seeds and enables plants to kill insects that feed on them. Thimet stays in the growing plants and continues to kill insects up to nine weeks after the plant has come through the ground. At present production costs, Thimet treatment of cotton seed will add about $3/acre to the cost of untreated seed. But treatment would replace 2-4 conventional spray applications to growing plants to control mites, etc.—*American Cyanamid Co., New York* 20, *N. Y.*

Miticide

Kills mites in all stages of development. (73E)

. . . Genite EM-923 is designed to solve commercial fruit growers' problems with mites. Single application kills tiny insects in all stages of development, but is non-toxic to beneficial insects and bees.—*General Chemical Div., Allied Chemical & Dye Corp., New York* 6, *N. Y.*

Phosphate Feed, Liquid

Cuts cost and labor. (73F)

. . . Feed supplement known as "phosphate feed solution" is offered as a cost- and labor-saving replacement for dry phosphates currently on the market. Solution contains a minimum phosphorus content of 23.7%, compared with 18-21% for the solid. Costwise, unit price of phosphorus f.o.b. manufacturing point is $3.59—based on sales price of $85/ton of new material. For solid form, unit price is $4. This means a saving of about $9/ton. Only minor plant changes and relatively small capital investment are needed to switch over from conventional processes to the new method. All that's needed are storage facilities and metering devices.—*Inorganic Chemicals Div., Monsanto Chemical Co., St. Louis* 4, *Mo.*

Piperonyl Butoxide

Form of indirect insect control. (73G)

. . . Indirect insect control is possible wiith piperonyl butoxide which, although "non-toxic," can inhibit normal development of insects and eventually cause their death. Butoxide is normally added to insecticides to boost their effectiveness. Alone, it slows down the rate of housefly larvae development, prevents many from becoming adults, particularly those that are DDT-resistant.—*U. S. Dept. of Agriculture, Washington, D. C.*

• Bonding Agents

Adhesive

40 lb. per in. peel strength; 2,000 psi. tensile shear strength. (73H)

. . . Plymaster V2, a glass-mat supported adhesive film, can be cut in special shapes for specific applications, saves time and labor costs in metal and metal-to-plastic bonding. Adhesive pickup on reinforcing glass mat base is about 5 oz./sq.yd. One of Plymaster V2's chief uses is for bonding metal skins to paper or to metal honeycomb cores in sandwich construction.—*Rubber & Asbestos Corp., Bloomfield, N. J.*

BONDING AGENTS, continued

Adhesive, Epoxy-Based

One-part. (74A)

. . . One-part epoxy-based adhesive permits for the first time, it's claimed, economical use of adhesive bonding in mass production joining of metals, rigid plastics. Bondmaster M620 needs no mixing of separate resin and hardener, contains a thixotropic additive which prevents adhesive from running before or during cure.—*Rubber & Asbestos Corp., Bloomfield, N. J.*

Adhesive, Waterproof

For fast fabrication of boxboard, paperboard. (74B)

. . . Alkaline-running waterproof adhesive based on resorcinol makes possible higher production rates for waterproof grades of corrugated or laminated boxboard, paper tubes, bags. Adhesive possesses waterproofing qualities of starch-urea-formaldehyde adhesives, yet it permits corrugated board production speeds which are obtainable with conventional starch pastes.—*Koppers Co., Inc., Pittsburgh 19, Pa.; A. E. Staley Mfg. Co., Decatur, Ill.; Penick & Ford, Ltd., Inc., Cedar Rapids, Iowa.*

Cement, Nylon

Needs no curing. (74C)

. . . Nylosil cement needs no curing, is available in wide viscosity range. Cement bonds have all the strength of nylon itself, are effective over a wide temperature range. Nylosil resists oils, aromatics, aliphatic solvents, alkalis and bleaches.—*Ions Exchange Corp., New York 13, N. Y.*

Polysaccharides, Synthetic

Solutions characterized by excellent stability, compatibility. (74D)

. . . Cold-water dispersible synthetic polysaccharides are available in 4 viscosity grades: Polyose A, B, C, D. Polyose A is suggested for applications requiring use of water-soluble adhesives having good flow and freedom from setback at high solids. B gives higher viscosity, better adhesion than A. Polyose C is more viscous than B and may be preferred for replacement of gum arabic in adhesive applications. D doesn't have length and initial tack which the other Polyoses possess, but its final adhesion is excellent.—*Corn Products Refining Co., New York 4, N. Y.*

Solder, Tinless

Tests stronger than Sn-Pb solder. (74E)

. . . Tinless, organic solder may free the metal container industry from its dependence on imported tin. This high strength bonding cement adheres well to plain metal as well as to lacquered surfaces. And it tests, on the average, 15 lb. stronger than conventional tin-lead solder. Another advantage: use of tinless solder eliminates "solder stripe" on cans, permitting all-over enamel labeling.—*Dewy & Almy Chemical Co., Cambridge, Mass.*

Tape, Teflon

Pressure-sensitive. (74F)

. . . Pressure-sensitive Teflon tape, No. 549, defies action of many reactive chemicals, resists corrosion and is unaffected by temperatures ranging from −65 to 400 F.—*Minnesota Mining & Mfg. Co., St. Paul 6, Minn.*

• Lubricants

Additive, Lube

Increases efficiency, life of industrial lubricants. (74G)

. . . Hyperoil, a lubricant additive, is said to increase the efficiency and extend the life of any type and weight of industrial lubricant. Tests show that addition to cutting oil increased oil's registered load-carrying capacity by 144%; addition to water-soluble cutting oil increased coolant life by 75%, working efficiency by 35%; addition to hydraulic oil increased pump life by 250%.—*Destiny Products Co., Detroit 2, Mich.*

Esters, Lube

Azelaic-based. (74H)

. . . Azelaic-based lubricant esters, Emolein 2957 (isooctyl ester) and Emolein 2958 (di-2-ethylhexyl ester), are available commercially. Among major advantages claimed are: Outstanding viscosity-temperature relationships; high flash value.—*Emery Industries, Inc., Cincinnati 2, Ohio.*

Fire-Resistant Lubricant

Minimizes fire, explosion hazards. (74I)

. . . Cellulube 220, only safety fluid approved by U. S. Navy for use in hydraulic systems of deck-edge elevators on aircraft carriers, is one of a series of fire-resistant hydraulic fluids. It's a highly viscous fluid for general hydraulic service and special lubricating applications in hazardous locations.—*Celanese Corp. of America, New York 16, N. Y.*

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Ammonium nitrate-water solutions containing respectively 83% and 50% (NH_4NO_3). Available from three producing plants.

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A rocket propellant; fumigant, fungicide and sterilant; reactive chemical intermediate for the synthesis of acids, alcohols, alkylanolamines, cyanohydrins, esters, ethers, glycols and halohydrins.

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Hygroscopic, non-corrosive liquid with many uses.

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Low volatility, high boiling point liquid with many uses.

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Used in virtually every industry, easy to handle, reactive. Triethanolamine available in two grades—commercial and 98%.

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Available as 37% Inhibited, 37% Low-Methanol, 45% Low-Methanol, 50% Low-Methanol.

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Synthetic methyl alcohol of 99.85% purity.

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products are the result of more than 60 years of experience. They are backed by high standards of quality, enterprising research, technical assistance and prompt service. We welcome inquiries about any of these products or derivatives of them.

LUBRICANTS, continued

Fire-Resistant Lubricants

Hydraulic fluids. (76A)

. . . Series of fire-resistant synthetic oils (Cellulubes) has been expanded to include hydraulic fluids and lubes in six different controlled viscosities—90, 150, 220, 300, 500 and 1,000 SUS seconds at 100 F.—*Chemical Div., Celanese Corp. of America, New York 6, N. Y.*

Kel-F Oils, Waxes

Meet severe demands of industrial operation. (76B)

. . . You can buy fluorocarbon sealants, lubricants and fluids to use in processing at high temperatures and pressures—and in the face of extremely corrosive conditions. Some suggested end uses to consider include: compressor lubricants, heat transfer media, sealants and lubes for plug cocks and valves, organic reaction and extraction media, aromatic-aliphatic separation in petroleum refining.—*M. W. Kellogg Co., Jersey City 3, N. J.*

Lubricants

Fluorinated dialkyl esters more stable than unfluorinated analogs. (76C)

. . . Lubricants based on diesters of fluorinated alcohols aren't decomposed at temperatures as high as 500 F. and resist oxidation for 168 hr. at 400 F. Many have ignition temperatures ranging from 850 F. to 1,000 F. And lubricating ability is comparable to petroleum oils. Esters of partially fluorinated alcohols appear more useful than those with CF_3 terminal groups because they're more viscous, have higher viscosity indexes and lower freezing points, are potentially available at lower costs and larger volumes.—*Naval Research Laboratory, Washington 25, D. C.*

Silicone Lubricants

Flow at —100 F., function up to 400 F. (76D)

. . . Versilube F-50 (lube fluid) and Versilube G-300 (grease) are two silicone compounds which lubricate as well as petroleum oils and greases yet retain all of the typical silicone properties. Both Versilubes possess potential in sleeve bearings, ball bearing motors, instruments, pipe thread compounds, hydraulic systems, etc.—*General Electric Co., Waterford, N. Y.*

Teflon Lubricant

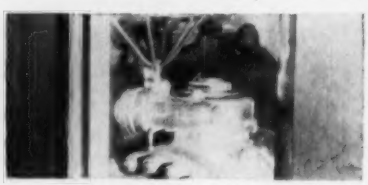
Used over wide temperature range. (76E)

. . . Teflon dry lubricant can be applied in a thin film—just a few tenthousandths of an inch thick. Used as a combination dry lubricant and corrosion preventive, it's serviceable over a wide temperature range—from —75 to 500 F.—*Naval Research Laboratory, Washington 25, D. C.*

Valve Lubricant

Survives below-zero temperatures. (76F)

. . . Tested in a 24-in. Rockwell-Nordstrom valve, new valve lubricant gave a leak-tight seal at temperatures ranging from —50 to 80 F., at 50 psi. and 800 psi. line pressure—both balanced and unbalanced on either of adjoining flanges.—*Rockwell Mfg. Co., Pittsburgh 8, Pa.*



• Maintenance Chemicals

Automotive Chemicals

For auto fuel and conditioning systems. (76G)

. . . Alemite Kleen Treet and Alemite Cooling System Conditioner are designed to benefit auto fuel and conditioning systems. Kleen Treet cleans carburetor jets of gums, keeps pump and fuel lines free of rust and corrosion, lubricates fuel pumps, acts as an anti-icer. Cooling System Conditioner cleans the cooling system, is a rust inhibitor and water-pump lubricant.—*Alemite Div., Stewart-Warner Corp., Chicago, Ill.*

Cement Systems, Oil Well

Offer savings in cement, rig time. (76H)

. . . A 16,531-ft. wildcat oil well (western Wyoming) with static bottom-hole temperature of 235 F. was cemented in 35-deg.-below-zero weather with estimated total savings in cement and rig time of 20%. Job was done with system using two of three Diacel additives combined with portland cement. All three additives Diacel D, Diacel LWL and Diacel A permit wide range of down-hole conditions. D permits the formulation of low-density cements, LWL controls water loss and retards the thickening time of cement slurries; A allows placement of low water loss cements over greater temperature range.—*Drilling Specialties Co., Bartlesville, Okla.*

Coating, Surface

Protects macadam, asphalt concrete, etc. (77A)

. . . Stontreet, surface-resistant coating, protects macadam, asphalt concrete or black top from grease and gasoline, salt spray, alkalis, brines, atmospheric acids, water penetration, smoke and fumes. Can be brushed or sprayed on damp surfaces, producing a non-tacky film which isn't slippery —even when wet.—*Stonhard Co., Philadelphia 23, Pa.*

Concrete, Rubber-Based

Combines concrete's durability with hardwood's resiliency. (77B)

. . . Laticrete, a combination of liquid rubber and special cement, gives without cracking under heavy loads, dampens noise, resists alkalis and mild acids, is waterproof, has non-slip quality. It adheres well to clean, neutral surfaces, cures in two or three days to give a surface which will take compressive loads of 2,500 psi. Laticrete is being evaluated for repairing floors, cushioning pads of heavy machinery, waterproofing storage tank interiors, protecting floors and equipment from chemical attack.—*Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.*

Corrosion Inhibitor

Operates in oil-well atmospheres containing CO, H_2S. (77C)

. . . UC-54 corrosion inhibitor for oil wells, pipelines and other field installations is an organic compound for use in atmospheres containing CO, H_2S, other sulfur compounds and hydrocarbons. In field tests over 5-yr. period, it purportedly reduced corrosion by 61% compared with 30% by best available organic inhibitor. At present, inhibitor is being marketed only in California.—*Union Oil Co., Los Angeles, Calif.*

Floor Wax

Germicidal. (77D)

. . . Carnauba-type, germicidal liquid floor wax contains all the desirable characteristics of a fine quality floor wax plus a potent germ-killer, *o*-benzyl-*p*-chlorophenol. Floors stay bacteria free as long as Amazon Germidical Floor Wax remains on. Damp mopping actually increases germ-killing activity.—*Trio Chemical Works, Inc., Brooklyn, N. Y.*

Floor Wax, Conductive

Minimizes danger of static electricity. (77E)

. . . Conductive floor waxes VC-26 and H-22 are the first such waxes to gain acceptance by the Underwriters' Laboratories for application wherever there is danger of static electricity and wherever conductive floors have been installed.—*Huntington Laboratories, Huntington, Ind.*

Grease, Synthetic

Used at very low temperatures. (77F)

. . . Semifluid synthetic grease is suitable for a wide range of uses involving low temperatures and icing conditions. Grease contains rust-inhibiting and anti-wear additives. It's compatible with oil resistant rubber used for O- and T-rings in pneumatic feeder systems for aircraft machine guns.—*Naval Research Laboratory, Washington 25, D. C.*

Mastic, Fire-Resistive

Nonflammable in wet state (77G)

. . . Fire-resistive mastic 60-60N is a combination of nonasphaltic fibrated polymers in nonflammable solvents, designed to eliminate plant fires caused by ignited mastic coatings. 60-60N is nonflammable in wet state; when dry and exposed for 2 minutes to violent kerosene flame, it stops smoldering within seven seconds after removal from flame. Dry film retains maximum flexibility and chemical resistance indefinitely. As an insulation coating, 60-60N is an excellent vapor barrier. Mastic is approved by Underwriters' Laboratories as fire resistive. —*Benjamin Foster Co., Philadelphia, Pa.*



Moisture-Proofing Additive

Makes concrete impervious to water. (77H)

. . . Addition of 2-4% Losorb, a moisture-proofing resin additive, permanently decreases permeability of concrete block, mortar, plaster, etc. A hydrocarbon resin, Losorb also minimizes crack frequency; makes mix more plastic, easier to work; acts as lubricant in molding; minimizes shrinkage is curing; prevents stucco from drying and cracking before concrete base cures; prevents corrosion in concrete-supported steel.—*Pennsylvania Industrial Chemical Corp., Clairton, Pa.*

MAINTENANCE CHEMICALS, continued

Scale Preventive

Removes hard-water scale buildup in pipes, tanks, boilers, etc. (78A)

. . . Ke-Tone chelating compound controls formation of sulfate, ferric oxide or carbonate scale in hard water. Compared with conventional water treatment methods, it claims to do a better job with scale already deposited. After addition of Ke-Tone to water, daily check on system shows gradual but continuous rise in hardness because scale already deposited is disintegrating or going back into solution. Blow-downs keep hardness at reasonable levels. When system is free of scale, hardness returns to its initial value. Ketone doesn't change equilibrium to favor precipitation of Ca or Mg.—*United Chemical Corp., of New Mexico, Hobbs, N. M.*

Seal, Storage

Used on underground storage chambers, concrete tanks. (78B)

. . . Rock Seals constitute a series of emulsions of neoprene and silicone rubbers which, together with resins and compounding agents, cure to form nearly impervious films on inner walls of underground storage chambers. They're highly resistant to oils, gasoline, propane, butane, kerosene, fuel oil, brine, acids, ammonia, alkalis, most other chemicals and solvents. They also resist vibration, expansion, contraction, abrasion, high pressures. They withstand repeated flexing and retain their flexibility from —65 to 300 F.—*Storage and Sealing Corp., Minneapolis 2, Minn.*

Shield, Radiation

Simplifies hot cell shielding. (78C)

. . . Ferrophosphorus aggregate produces concrete density of 209 to 300 lb. per cu. ft., shows excellent workability and no segregation, doesn't rust. Therefore it's ideal for atomic hot cell installations (room-size chambers in which radioactive materials are worked or handled) which require walls that are thick enough to shield workers, yet are thin enough to permit close supervision of work.—*Victor Chemical Works, Chicago 6, Ill.*

Solvent, Industrial

20x less toxic than CCl_4. (78D)

. . . Vinsol industrial solvent is as effective, but up to 20 times less toxic, than carbon tetrachloride. It's nonflammable, can be used in confined areas, near open flames, near grinding equipment. Recommended uses: removing oil, grease, wax from tools. —*Speco, Inc., Cleveland, Ohio.*

• Organic Chemicals

Acrolein

Increased supply assures bright future. (78E)

. . . Successful commercial synthesis of glycerin from hydrogen peroxide and acrolein means that the latter chemical will at last be available in commercial, low-cost quantities for wider use as a processing material. It might be used in reactions with halogens, halogen acids, alcohols, mercaptans, organic acids, water, bisulfites. Also in reactions with compounds containing an active carbon-to-hydrogen bond, molecular hydrogen; in Diels-Alder reactions.—*Shell Chemical Corp., New York 20, N. Y.*

Alkyl Aryl Sulfonates

In wide weight range. (78F)

. . . Alkyl aryl sulfonates are now available in a wide range of molecular weights, thus making possible the selection of a sulfonate with the proper hydrophobe and hydrophile balance for any given application. Weights range from 208 to 480. Water-soluble compounds (Ninex) are used as coupling agents, foamers, etc. Oil-soluble compounds (Ninates) serve as water-in-oil emulsifiers, corrosion inhibitors for oils or gasoline, drilling mud additives.—*Ninol Laboratories, Inc., Chicago 16, Ill.*

Amines, Tertiary

For quaternary ammonium syntheses. (78G)

. . . Armeen M2HT, Armeen M2C and Armeen M2S, three dialkyl methyl tertiary amines, are proving of interest as intermediates for synthesis of dialkyl quaternary ammonium compounds. Drum quanities of all three are available.—*Market Development Dept., Armour and Co., Chicago 9, Ill.*

Amines, Tertiary

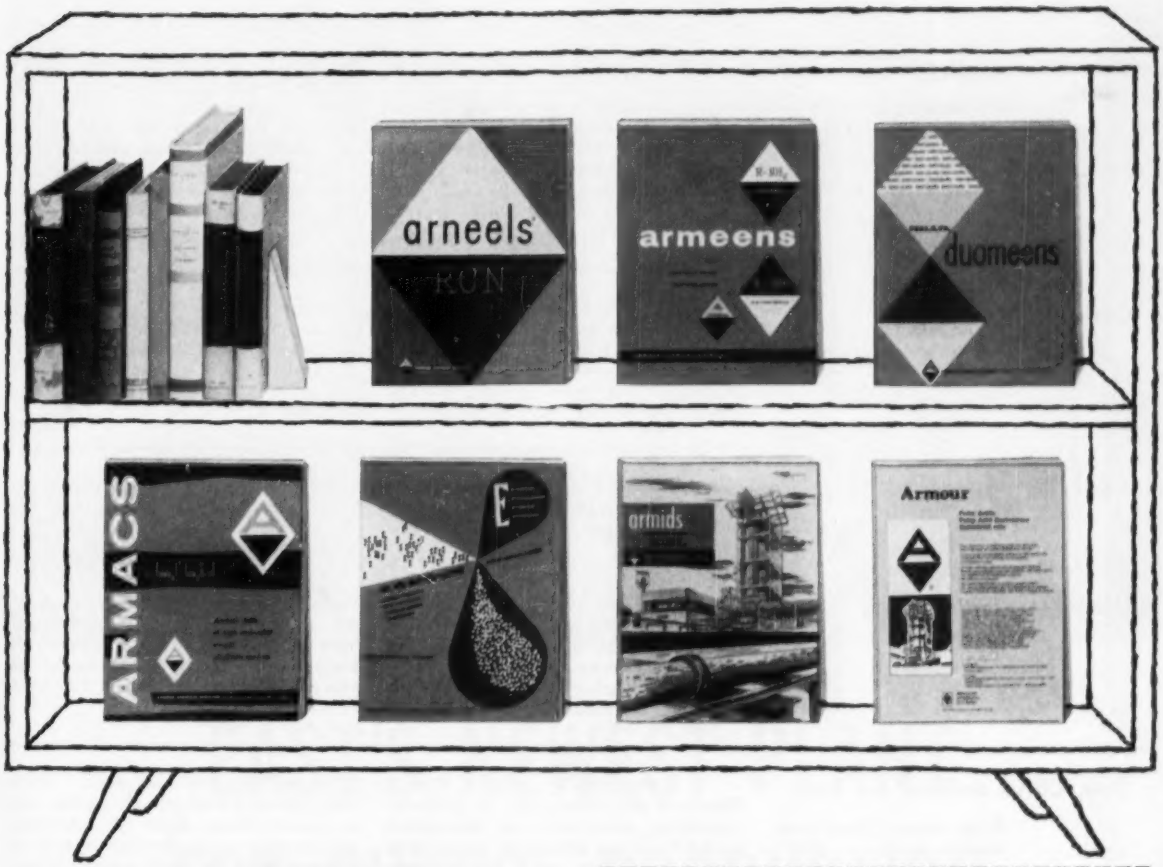
Purest ever produced. (78H)

. . . Purest dimethyl alkyl tertiary amines ever produced are available in quantity. Undistilled grade has at least 80% tertiary amines; distilled grade, at least 92%. Amines are used as catalysts in isocyanate foam, as lube oil additives, etc.—*Armour and Co., Chicago 9, Ill.*

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ORGANIC CHEMICALS, continued

Benzonitrile

Produced commercially at good price. (80A)

. . . Benzonitrile can be produced in commercial volume at prices attractive to many industries, e.g., plastics, pharmaceuticals, synthetic coatings, solvents, etc. Key is new process now turning out developmental quantities. —*Tennessee Products & Chemical Corp., Nashville 3, Tenn.*

Chlorofluorocarbons

Intermediates for plastics, paint, textiles. (80B)

. . . Four chlorofluorocarbons are now available as intermediates for a number of chemical applications. 2,3-dichlorohexafluorobutene-2 is expected to find use in plastics, refrigeration, textile, paint, protective coatings. 1,2-dichlorohexafluorocyclopentene-1's potential markets include polyester and polyamide resins, hydraulic fluids, elastomers, wetting agents. 2,2,3,3-tetrachlorohexafluorobutane is of interest in protective coatings and as a fumigant. 2,2,3-trichloroheptafluorobutane has thermodynamic and electrical properties for application as a coolant, dielectric and refrigerant.—*Hooker Electrochemical Co., Niagara Falls, N. Y.*

Citric Acid

Aids in secondary oil recovery. (80C)

. . . Citric acid acts as a sequestrant in eliminating costly iron plugging, major cause of flow stoppage in secondary oil recovery. It preferentially sequesters iron, even in high calcium waters, preventing precipitation of insoluble iron salts. Thus current recovery methods like acidizing and fracturing can be eliminated, flow rate of oil can be boosted at less cost.—*Chemical Sales Div., Chas. Pfizer & Co., Brooklyn 6, N. Y.*

Coal Derivatives

For dyes, etc. (80D)

. . . Phenanthrene, fluoranthene and pyrene containing no troublesome impurities are available in commercial quantities for use in dyestuffs and pharmaceuticals.—*Union Carbide and Carbon Corp., New York 17, N. Y.*

Diethanolamines, Fatty

150% active. (80E)

. . . Super Amides L9, GR and GC are nearly pure fatty acid diethanolamine condensates—150% active compared with 100% active currently available products. Higher purity offers advantages to alkanolamide detergent makers: Absence of uncombined diethanolamines makes neutralization of base unnecessary, avoids electrolytes. Reduction of fatty acids, soaps improves foam.—*Onyx Oil & Chemical Co., Jersey City 2, N. J.*

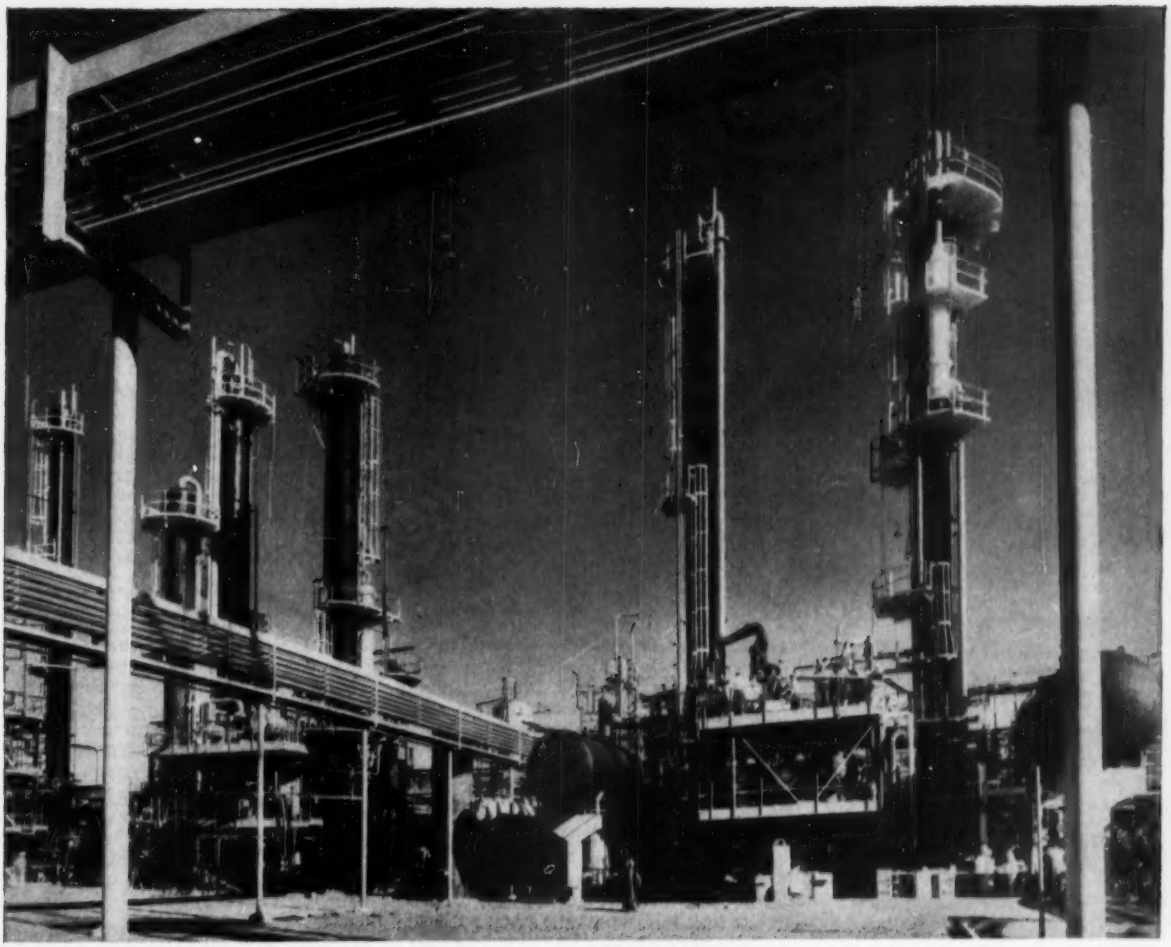
Dye, Citrus Aniline

From waste citrus pulp, water soluble (80F)

. . . Water soluble aniline dye, a flavanone azo compound, is made by combining hesperetin or naringenin found in citrus pulp and waste with aniline or aniline bases. This combination provides an excellent stain composition which can be fixed in the cellulose pores of the wood. Citrus stain formulations are cheap and easy to manufacture; light fast; non-fading; non-bleeding through lacquer or varnish top finishing coats. Fillers can be mixed with the stain.—*Chadeloid Corp., Dayton, Ohio.*

For More Information . . .

For more information on any item, simply write its code number on one of the Reader Service postcards inside the back cover of this issue. Mail it and information comes to you from the manufacturer. You can also write directly to the producer at the address given. Or you can refer to the August 1955–July 1956 issues of CE by using the monthly index in the Chemicals & Raw Materials department or the annual index in December. For speed and convenience, use Reader Service postcards.



EAST'S NEWEST PLANT FOR PHENOL PRODUCTION

Now in its second year on stream at Gibbstown, New Jersey, the East's newest phenol plant has already become one of the leading sources of supply. Here Hercules produces high-quality U.S.P. synthetic phenol by the cumene oxidation process.

Prompt shipment in tank cars, tank trucks or drums from this modern plant is available. You may save time and labor if you explore the economy in receiving phenol by tank truck in molten form. Let us discuss this service with you.

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NOS6-3

ORGANIC CHEMICALS, continued

Ethers, Polyglycol

Commercial solvents, reaction media. (82A)

. . . Dimethyl ethers of four ethylene glycols are useful as commercial solvents and as reaction media. The four glycols are: E-121 (ethylene glycol), E-141 (diethylene glycol), E-161 (triethylene glycol) and E-181 (tetraethylene glycol). Possible applications of these ethers include: Dust abatement (E-181), CO_2 absorbent (E-181), cellulose derivative solvent (E-121), detergent constituent.—*Ansul Chemical Co., Marinette, Wis.*

Fatty Alcohols

Beckon to chemical processors for use in variety of fields. (82B)

. . . Twelve normal alcohols—saturated and unsaturated—in 29 different composites are offered by Archer-Daniels-Midland for use as chemical intermediates. Some have as many as 22 carbon atoms and as many as 5 carbon-to-carbon double bonds. Two boast a pair of hydroxyl groups for greater utility. Oleyl alcohol is available in its purest commercial form. Fatty alcohols (or their derivatives) can be used in a variety of applications, e.g., water repellent formulations, alkyd resins and plasticizers, olefins syntheses, epoxidation. They should appeal to producers of emulsion-stabilizers, corrosion inhibitors, etc.—*Archer-Daniels-Midland Co., Cleveland, Ohio.*

Haloparaffins

Chlorofluorohydrocarbons for propellants, refrigerants. (82C)

. . . Initial products in a new Isotron line—complete family of chlorofluorohydrocarbons—include three methane derivatives: CCl_2F, CCl_2F_2 and $CHClF_2$. Early additions to the line will be ethane derivatives: $C_2H_3Cl_2F$ and C_2Cl_2F. Though Isotron production will be concentrated on serving aerosol propellant and refrigerant fields, anticipated use of fluorine chemicals is expected in pharmaceuticals, metal fluxes, agricultural chemicals, synthetic rubbers, materials for atomic energy industry.—*Industrial Chemicals Div., Pennsylvania Salt Mfg. Co., Philadelphia 2, Pa.*

Isophthalic Acid

Challenges phthalic anhydride in alkyd resins, plastics, etc. (82D)

. . . Now that isophthalic acid is available in commercial quantities, it's vying with phthalic anhydride for many of the latter's markets. Optimistic outlook for isophthalic is based on its superiority over phthalic anyhydride: Shows greater heat and chemical stability; makes harder, higher melting resins; produces tougher films; forms higher polymers with alcohols and amines; has lower vapor pressure, doesn't cake; is less toxic. Biggest potential is in alkyd paints.—*Oronite Chemical Co., Richmond, Calif.*

Itaconic Acid

In two grades. (82E)

. . . Itaconic acid is now available in two grades, pure and technical. Pure acid's price is 54¢/lb. (cut from 60¢/lb.); technical grade is 44¢/lb.—both in carload lots.—*Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.*

Kojic Acid

Pyrone with 4 reactive groups in benzene ring. (82F)

. . . Fifty-year old research chemical, kojic acid, has been brought into commercial spotlight by industrial fermentation. Dyes prepared from acid for cotton, silk, wool show fastness to washing and light. Acid's good ultraviolent absorption curve may fit it for cosmetic sunscreen preparations. Stable metal chelates can be formed at the 4- and 5-ring positions. In addition to pyrone oxygen, acid has carbonyl, hydroxyl, benzyl alcohol groupings.—*Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.*

Lithium Ricinoleate

Alkyds catalyst. (82G)

. . . Lithium ricinoleate is said to be faster, more reliable than any ester interchange agent now used. Points claimed: No poisoning by residual phthalic; reduction of alcoholysis time; no formation of collodial metal phthalates as with lime or litharge catalyst; production of precipitate-free monoglycerides.—*Baker Castor Oil Co., New York 5, N. Y.*

Malonaldehyde Diacetal

Available in volume. (82H)

. . . Diacetal of malonaldehyde (1,1,3,3-tetra alkoxy propane), now in commercial production, should be of special interest as an insolubilizing or cross-linking agent for proteins and/or polyhydroxy materials. It has versatility of a 3-carbon dialdehyde with an active methylene group and undergoes many reactions. At present, only mixed (triethyl monomethyl) diacetal of malonaldehyde (TEMP) is available in volume quantities though pilot work is being done on the tetramethyl diacetal (TMP). TEMP has development price of $1.80/lb. But sustained production should bring price down to around $1.25/lb.—*Kay Fries Chemicals, Inc., New York 16, N. Y.*

by cooperative research QUALITY CHEMICALS

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Cyclopentyl Bromide. A clear, colorless liquid with an aromatic odor. Specially prepared for use in organic synthesis, particularly for introduction of the cyclopentyl radical. Many potential uses in manufacture of pharmaceuticals. Purified grade, 2 degrees C. boiling range.

1, 3-Dibromo-5, 5-dimethylhydantoin. $C_5H_6Br_2O_2N_2$. A bromine carrier and oxidizing agent. Useful in synthesis for side chain bromination and bromination of allylic carbon atoms. A fine stable powder with a minimum active bromine content of 54%.

β - Diethylaminoethyl Chloride Hydrochloride. $(CH_3CH_2)_2NCH_2CH_2Cl \cdot HCl$ (DEC). A granular solid. Specially suited for use as an intermediate in organic chemical manufacture, including antispasmodic agents and other pharmaceuticals.

β - Dimethylaminoethyl Chloride Hydrochloride. (DMC). $(CH_3)_2NCH_2CH_2Cl \cdot HCl$. A granular solid. Specially prepared for use in manufacture of antihistaminics and other pharmaceuticals. Other potential uses in organic synthesis. Relatively nontoxic in hydrochloride form.

β - Dimethylaminoisopropyl Chloride Hydrochloride. $(CH_3)_2NCH_2CHClCH_3 \cdot HCl$. (DMIC). An organic intermediate similar in appearance and properties to DEC and DMC. Specially prepared for manufacture of analgesics and other pharmaceuticals. Other potential uses in organic synthesis.

γ - Diethylaminopropyl Chloride Hydrochloride. $(C_2H_5)_2NCH_2CH_2CH_2 \cdot HCl$ (DEPC). A light tan to white crystalline hygroscopic solid. Used in pharmaceutical manufacture, especially for introduction of the diethylaminopropyl radical.

γ - Dimethylaminopropyl Chloride Hydrochloride. $(CH_3)_2NCH_2CH_2CH_2Cl \cdot HCl$ (DMPC). A white powder of singular purity. A versatile intermediate for pharmaceutical and organic syntheses, available exclusively from Michigan Chemical.

Ethyl Bromide. A clear, colorless, volatile liquid, specially prepared for use as an intermediate in organic synthesis. Practically free from impurities; has a narrow boiling range. Used in manufacture of dyes, perfumes and pharmaceuticals.

Hydrobromic Acid. A clear, colorless or light amber colored fuming liquid. Used for manufacture of inorganic metal bromides, aliphatic bromides, pharmaceuticals, dyes and intermediates. 48% acid and other strengths.

Magnesium Carbonate, Basic, Technical. Fine, uniform white powder, 325 mesh, bulk density 5.5 pounds per cubic foot. Very reactive. Used for rubber compounding, printing inks, paints, varnishes. Anticaking agent for table salt; conditioning or bulking material for powder formulations.

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Methyl Bromide. A heavy, colorless liquid, vaporizing at 40 degrees F., nonflammable and poisonous. Highly penetrating and insecticidally effective fumigant. Also used in organic synthesis for the introduction of the methyl group, especially in preparation of certain pharmaceutical chemicals.

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Potassium Bromide, N.F. X. Pure, white granular powder. Low in chloride, passes all N.F. requirements. Widely used in the preparation of photographic emulsions, and in lithograhy. One of the most important sedatives. Available in several granulations.

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Tetrabromophthalic Anhydride. $C_8Br_4O_3$. High molecular weight phthalic anhydride having a bromine content of 66%. Will undergo most of the reactions of phthalic anhydride. Pale yellow crystalline compound melting point minimum 265°C.

Trimethylene Chlorobromide. Clear, colorless liquid used in manufacture of anesthetic grade cyclopropane. Greater reactivity of bromine atom makes trimethylene chlorobromide specially useful also in preparation of gamma chloro compounds. Boiling range 2 degrees C. maximum.

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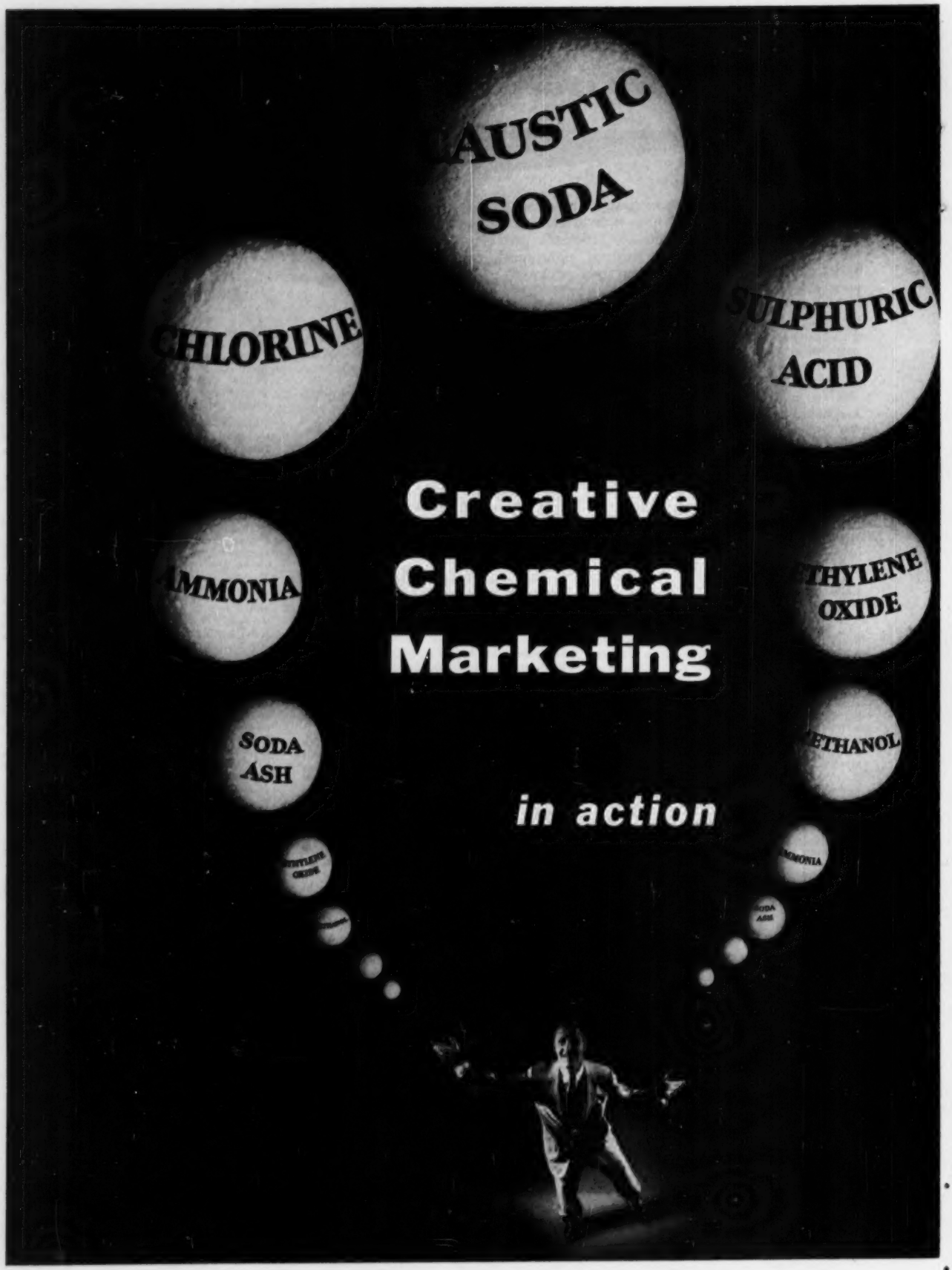
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ORGANIC CHEMICALS, continued

Methyl Vinyl Ketone

Offered through new source. (86A)

. . . Chas. Pfizer is now offering methyl vinyl ketone which, it says, can be stored for appreciable lengths of time without any noticeable changes in properties. Ketone, a highly reactive chemical intermediate for manufacture of plastics, adhesives, drugs, etc., is available in 55- and 5-gallon steel drums.—*Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.*

Monopentaerythritol

Pure monomer, has zero ash content. (86B)

. . . New process for manufacture of pentaerythritol monomer removes both organic and inorganic impurities. Removal of organic impurities increases pure monomer content. Elimination of inorganic impurities (ash content) makes it easier to obtain uniform properties in products made from the monomer.—*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

Nitroparaffins

Solvents and promising intermediates. (86C)

. . . As a class, nitroparaffins are powerful, selective solvents for many coating materials, waxes, resins, gums, dyes and organic chemicals. They're priced in the 20-25¢/lb. range. Four nitroparaffins—nitromethane, nitroethane, 1-nitropropane and 2-nitropropane—are now being commercially manufactured at Sterlington, La. Nitromethane is a solvent for vinyl resins, nitrocellulose, cellulose acetate, cellulose acetate butyrate, acrylonitrile polymers and polystyrene. Nitroethane, solvent for vinyls and cellulose esters, is an attractive raw material for pharmaceutical synthesis. 1-nitropropane has solvent properties similar to nitroethane and is used as a raw material for manufacture of hydroxylammonium salts. 2-nitropropane dissolves vinyl and cellulose esters, is starting point for 2-amino-2-methyl-1-propanol. Among derivatives made at Sterlington plant are: 2-amino-2-methyl-1-propanol, tris (hydroxymethyl) aminomethane, 2-amino-2-methyl-1,3 propanediol; hydroxylammonium sulfate. Others will soon be available.—*Commercial Solvents Corp., New York, N. Y.*

Oleic Acid

Single-distilled. (86D)

. . . Single-distilled oleic acid, Emersol 213 Low Titer Elaine, is identical to manufacturer's standard 211 Low Titer Elaine, same in price, but lighter in color.—*Emery Industries, Inc., Cincinnati 2, Ohio.*

Organic Intermediates

Now in commercial production. (86E)

. . . Benzyl ethylene oxide, 1-chloro-3-phenyl-2-propanol and benzyl ethylene glycol are now in commercial production. Mercapto and sulfone derivatives of these compounds may prove valuable as synergists and biocidal agents. Chlorinated amino alcohols should also have interesting possibilities.—*Millmaster Chemical Corp., New York 36, N. Y.*

Paraffin

Chlorinated. (86F)

. . . Liquid chlorinated paraffin called Chlorowax has a 50% chlorine content and is reported to provide superior color and heat stability. Chlorowax is odor-free, nontoxic and nonflammable. It has a high viscosity—about 125 poises.—*Diamond Alkali Co., Cleveland 14, Ohio.*

Pearl Essence

Made from herring scales. (86G)

. . . Guanine crystals, essential ingredient of natural pearl essence, are obtained from herring scales. Processing involves washing the scales with a solvent, centrifuging to separate crystals from liquid, suspending crystals in a lacquer or plasticizer base. The trick is to retain guanine's original crystalline structure in the final product. Synthetic essence—along with natural essence—is commonly used in simulated pearls, nail polish, plastics, leather coatings.—*Mearl Corp., New York, N. Y.*

Pyridine

No longer in tight supply, looking for new markets. (86H)

. . . Now that the gap between supply and demand has narrowed, pyridine is again ready to do the jobs it's best known for—as a solvent, acid acceptor, chemical intermediate, yield booster. As a solvent, it's completely miscible with water and almost all organic solvents. As a surface active agent, it can decrease filtration time. in reactions like condensation of carbonyl groups with active methylene groups and reduction of keto groups in sterol field, it serves as a catalyst. Through its ability to form quaternary compounds, it's used as a wetting and waterproofing agent. Quaternary salts are also used in fungicides, pharmaceuticals, tanning of leather.—*Pittsburgh Coke & Chemical Co., Pittsburgh, Pa.*

Pyromellitic Acid

Useful in plastics, finishes. (87A)

. . . Pyromellitic acid (PMA) and pyromellitic dianhydride (PMDA) are useful in plastics and finishes. Addition of PMA to alkyd formulations yields improved film properties. Epoxy resins cured with PMDA have heat distortion temperatures above 250 C. and superior chemical resistance.—*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

Sugar

Arousing interest as chemical raw material. (87B)

. . . Progress in sucrochemistry is such that an important organic chemical industry based on sucrose and its by-products is taking form before our very eyes. At present, sucrose is playing a leading role in at least four projects sponsored by the Sugar Research Foundation which are on or close to the threshold of commercial realization: Nonionic detergents, livestock feed from ammoniated beet pulp; drying oils for paints; tough, hard, transparent resins. And sugar by-products, notably bagasse, are already in industrial use. Bagasse is used in manufacture of Celotex insulation, newsprint, furfural. Cane filter muds are a source of a carnauba-like wax. Cane molasses goes into cattle feed; beet molasses is a precursor for monosodium glutamate.—*Sugar Research Foundation, New York, N. Y.*

Tallow Alcohol

In flake form. (87C)

. . . Flake form tallow alcohol, Sipon TX, is said to be lowest cost fatty acid on U.S. market. It can be used as a detergent intermediate, foam depressant and emolient, building block for manufacture of lube oil additives, in emulsifier synthesis.—*American Alcolac Corp., Baltimore, Md.*

Thiophene

In large quantities. (87D)

. . . Thiophene, a versatile heterocyclic sulfur compound, is available in large quantities. It's similar in many respects to phenol, benzene and some unsaturated hydrocarbons. Thiophene readily nitrates, halogenates, alkylates, metalates, acylates, aminates, condenses with formaldehyde and maleic anhydride.—*Sharples Chemicals, Inc., Philadelphia 7, Pa.*

Vinyl Propionate

Available from two new sources. (87E)

. . .Vinyl propionate—used in emulsion paints, adhesives, laminates, protective coatings—is available from Celanese and Union Carbide and Carbon. Propionate is third vinyl polymer offered by both firms. Price is 47¢/lb. in tank car quantities.—*Celanese Corp. of America, New York 16, N. Y.; Union Carbide and Carbon Corp., New York 17, N. Y.*

• Protective Coatings

Alkyds, Isophthalic Acid

For faster drying, more flexible films. (87F)

. . . Premium properties of isophthalic acid alkyds (over conventional phthalic anhydride resins) include: Faster drying at equal oil lengths, less tendency for "skin-drying," improved exterior durability, more flexible films. Three such alkyds are SF-2535 Super Beckosol, SF-1528 (both long oil alkyds) and PX-374 Super Beckosol (short oil alkyd). SF-2535 is used in exterior house paints, printing inks and other applications requiring low viscosity, high solid resin with good brushing characteristics. SF-1528 offers excellent color retention and durability needed for exterior paints and enamel undercoaters. PX-374 is used in primary automotive finishes.—*Reichhold Chemicals, Inc., White Plains, N. Y.*

Auto Finishes

Eliminate car waxing for 18 months. (87G)

. . . Two auto finishes—Dulux 100 and Lucite—offer a three-fold advantage over competitors: Abolish need for car waxing for at least 18 months, retain their luster 3x as long as conventional paints, reduce trouble from oil or grease staining. Dulux 100 hardness after baking is comparable to that of enamels in current use after several months of aging. Blister resistance and oven-bake discoloration are high. Lucite lacquer, in addition to ease of maintenance, makes possible new colors and color effects by blending powder and pigment in combinations which, heretofore, have been unsuccessful.—*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

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PROTECTIVE COATINGS, continued

Barrier Coating

Helps contain products not previously packageable in polyethylene. (88A)

. . . Internal barrier coating enables polythylene to package extended-shelf-life products like toothpastes, cosmetics, without odor or flavor dissipation. Without this coating certain essential oils permeate the plastic walls causing flavor and odor loss; some petrolatum-based or plasticized-hydrocarbon based materials bleed through walls causing oily staining and container collapse.—*Bradley Container Corp., Maynard, Mass.*

Ceramics, Flame-Sprayed

Aluminum oxide coating readily applied to many materials. (88B)

. . . Flame Rock coating is twice as hard as tool steel, has a melting point about 3,600 F., is unaffected by most corrosive agents. It can be applied via its own improved flamespray process to steel, titanium, carbon, brass, glass to give a coating that's chip-resistant and provides electrical as well as thermal insulation. Slight porosity absorbs lubricants, fitting it for bearing applications.—*Montaine Corp., Chicago 19, Ill.*

Coating Process

Coats metals, ceramics, glass, etc., with variety of plastic materials. (88C)

. . . Patented German process, Whirlclad, has been introduced into the U. S. as means of coating metals, ceramics, wood, glass with various plastic materials. Technique combines natural advantages of plastic coatings with parent material to be coated. It also makes use of coating materials which, heretofore, haven't ever been satisfactorily applied. Whirlclad consists of dipping preheated articles in a fluidized bed of finely divided plastic particles. Melting point of material to be coated must be higher than that of coating. To date, process has been used with nylon, low-pressure poly as coating mediums. But polystyrene, acrylics, epoxies can be used.—*Polymer Processes, Inc., Reading, Pa.*



Coating, Resin

Cuts cost, labor in maintenance of masonry surfaces. (88D)

. . . Glid-Iron, 100% solids resin coating, is expected to have unlimited possibilities as an industrial maintenance material. It adheres to wood, metal, concrete; resists chemical attack, shock, impact; smooths out and bridges small cracks; sets to a hard, tough, flexible, scuff-resistant finish after curing overnight at room temperature; withstands temperatures from −20 to 212 F. Application cost is 15-19¢/sq. ft., compared with other techniques ranging to 35¢/sq. ft.—*Glidden Co., Cleveland, Ohio.*

Coating System

Al-pigmented vinyl paint system tops in test. (88E)

. . . After five years of submersion in river water (as protective coating on section of Ohio River dam's steel floodgate), Vinsynite-Vinyl system was judged by the Army Corps of Engineers to have shown best corrosion resistance over 23 other systems tested. Winning coating consisted of a layer of improved wash-primer (FS-2 Vinsynite) followed by three coats of aluminum-pigmented vinyl paint.—*Thompson & Co., Oakmont, Pa.*

Paint, Fluorinated

Has unusual corrosion resistance. (88F)

. . . Lankote Fluoro-B, a fluorinated resin-based paint, protects metal and wood surfaces from highly concentrated alkalis and acids. Compared with ordinary paints, Fluoro-B will cover a smaller area (250 sq. ft. per gal.), but it won't fail under severe corrosive conditions. Its price, said to be the highest in the world, is $36/gal. in quantity, $40/gal. for small lots.—*Lankote Div., J. Landau Co., Carlstadt, N. J.*

Paint, Metal-Silicone

Withstands temperatures above 1,500 F. (88G)

. . . At temperature of 1,500 F. or more, Alumicone paint will not deteriorate as normal paint films do. Based on a silicone-alkyd resin base containing aluminum pigments, Alumicone has proved itself in various types of equipment, e.g., furnaces, stove or heater door parts, high-temperature smokestacks. Paint is simple to apply —by spray or brush—and requires no special primers or equipment.—*Atech, Inc., Toledo, Ohio.*

Paint, Zinc-Rich

Protects iron and steel. (89A)

. . . Zinc-rich paint, new to the U. S., electrochemically protects iron and steel in much the same manner as does galvanizing. It's pigmented 100% with zinc dust and contains plasticized polystyrene and chlorinated rubber as the vehicle.—*New Jersey Zinc Co., New York 7, N. Y.*

Paints, Fire Retardant

Minimize damage, loss of life. (89B)

. . . Army-developed fire retardant paints, containing certain pigments and oils which form a spongy insulating layer when subjected to heat, slow down burning rate. They materially minimize loss of life and property, possess all esthetic and protective properties of good interior and exterior paints.—*U. S. Army Corps of Engineers, Fort Belvoir, Va.*

Pigment, Phthalocyanine

Green toner. (89C)

. . . Cyan Green Toner 15-3100 has excellent working properties, good ease of dispersion and freedom from bodying in protective coating formulations. It's essentially nonbleeding in organic solvents, is stable in both acid and alkaline media.—*American Cyanamid Co., New York 20, N. Y.*

Pigments, Phthalocyanine

Blues and greens have experienced dramatic growth. (89D)

. . . Phthalocyanine blue and green pigments—with their extreme stability, light-fastness and chemical inertness—are finding their way into a variety of consumer products, meeting stringent requirements which would-be competitors can't touch. They can be used for every industrial and artistic application—e.g., industrial paint finishes, trade sale paint finishes, plastics, printing inks, floor coverings, leather finishes, paper coating, textiles.—*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

Pigments, Red

Replace scarce cadmium sulfo-selenides. (89E)

. . . Mercadium reds—combination of cadmium and mercury sulfides—are somewhat cheaper, yet offer equal performance, greater brilliancy and cleaner hue than scarce cadmium selenide reds. Industries most likely to reap benefits from the new reds include latex and emulsion paints, lacquers, auto finishes, textiles, printing inks, rubber, paper products.—*Pigment Color Div., Imperial Paper and Color Corp., Glens Falls, N. Y.*

Plastic Over Plywood

Permits wider outdoor use of plywood. (89F)

. . . Plywood has been pretty much limited to interior use because it couldn't stand up to severe weather conditions. But accelerated weather tests—moisture, heat, cold and fungus growth—show that Crezon-treated plywood won't check (if painted) under extreme conditions. Crezon, made from tough phenolic resin and wood fiber, is bonded inseparably to plywood by heat and pressure at the mill. Coating can be worked easily before application.—*Crown Zellerbach Corp., North Portland, Ore.*

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PROTECTIVE COATINGS, continued

Porcelain Finish

For steel products. (92A)

. . . Copper-like porcelain finish for steel products, Coppertan, has beauty and warmth of copper plus durability of porcelain enamel. It will not tarnish or scratch and is acid-resisting. Two layers of covercoat enamels (different colors) are sprayed over ground coat enamel and fired only once to give coppery finish.—*Pemco Corp., Baltimore 24, Md.*

Varnish, Insulating

Thermosetting, good electrical properties. (92B)

. . . Thermopoxy T-635-LB, based on epoxy resins, has exceptional electrical insulation endurance in the presence of chemical atmospheres, moisture, radical temperature changes (from −55 to 200 C.). The varnish cures throughout on exposure to baking temperatures ranging from 135 to 150 C. On curing, it develops a coating with exceptional adhesive and bonding strength.—*Sterling Varnish Co., Haysville Borough, Sewickley, Pa.*

Vinyl for Waterproofing

Waterproofs underground reservoir. (92C)

. . . Flexible vinyl skin, sprayed over miles of expansion joints inside a giant underground, reinforced concrete reservoir holding 25 million gallons of water, moves with concrete contractions and squeezes seepage to a trickle—1½ to 2 gpm.—*Bakelite Co., New York 16, N. Y.*

• Pulp and Paper Chemicals

Paper, All-Glass

8x stronger than predecessor. (92D)

. . . All-glass paper is now eight times as strong (300 psi.) as that first made in 1951 (30 to 40 psi.). As such, it should be more practical as a filter for hot or corrosive fluids, as an air filter and as an electric insulator.—*National Bureau of Standards, Washington 25, D. C.*

Paper, Glass

Very soft, tissue-like film. (92E)

. . . Tissuglas is a combinatioin of microglass fibers to which a binder and/or impregnations can be added for desired electrical, chemical and thermal properties. When specified, binder is insoluble in aqueous and most organic solvents. Impregnations have been made with melamine epoxy, polyvinyl chloride. Plain Tissuglas can be as much as 95% air by volume, providing industry with a carrier sheet composed of up to 95% resin, 5% inert carrier. Thicknesses range from 0.5 to 13 mils, widths to 40 in. It can be used in surfacing sheets for high- and low-pressure laminates; backing material for volume-production sheet products.—*Commercial Development Div., American Machine & Foundry Co., New York 16, N. Y.*

Pulp Products, Waterproofed

Possible using metal ions. (92F)

. . . Waterproofing pulp products from wood and straw is possible by reacting metal ions with the natural substances already present in the fibers. Usually an outside organic agent is precipitated—via metallic ion addition—onto the surfaces of the fibers to obtain sizing.—*Prairie Regional Laboratory, National Research Council, Saskatoon, Saskatchewan.*

Sizing Agent

Coats paper with oil-resistant film. (92G)

. . . Fluorochemical paper-sizing agent coats every fiber with an oil-resistant film without affecting strength, porosity, flexibility, appearance or color of paper. Widespread use is expected on kraft paper destined for heavy-duty wrapping of oily gears, bearings, pistons, etc. It also works well on fiber drums, paperboard containers and prevents "bleedback" in laminated and coating paper constructions. Treatment can be effected with existing equipment in most paper production lines by spraying or pressing the agent on the moving paper.—*Minnesota Mining and Mfg. Co., St. Paul 6, Minn.*

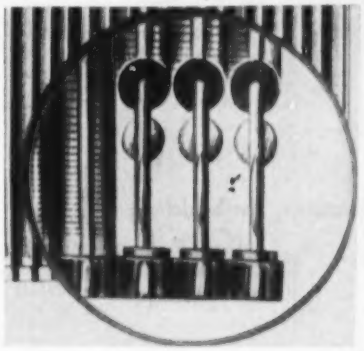


• Resins and Plastics

Battery Parts, Poly

Lengthen battery life, increase capacity. (93A)

. . . Polyethylene is used exclusively in tubing and tube sealers which encase the active material and grid spines of positive plates in all Exide-Ironclad industrial batteries. Poly's advantages in battery construction: Lengthens battery life by 20% or more, makes possible higher initial capacity, withstands wide range of battery working conditions, tubing can be slotted to a greater % porosity than rubber, plate size can be increased without increasing battery case size.—*Exide Industrial Div., Electric Storage Battery Co., Philadelphia 1, Pa.*



Casting Compound, Epoxy

Meets specific government specs. (93B)

. . . Filled epoxy-base casting compound, Hysol 6600, has been specifically developed to meet requirements of MIL-T-28A specs—for potting and encapsulating electrical equipment. Compound is soft solid, melting to easily handled, low-viscosity liquid. It's suited for applications requiring a slight degree of resiliency, good thermal conductance. 6600 withstands temperatures to 150 C.—*Houghton Laboratories, Inc., Olean, N. Y.*

Cellulose Propionate

Sets sights on cellulose acetate butyrate market. (93C)

. . . Celanese's swing into commercial productioin of cellulose propionate plastic in November, 1955, marked the first volume availability of the propionate in this country. Though belonging to the same family of plastics, propionate, tradenamed Forticel, has advantages over the butyrate. It's a little harder, odorless—even at high temperatures of injection molding; has somewhat better abrasion resistance; molds more easily. Price—62¢/lb.—is close to cellulose acetate butyrate's. Markets: telephones, appliance housings, etc.—*Celanese Corp. of America, New York 16, N. Y.*

Chlorinated Polymer

Performs on par with more expensive materials. (93D)

. . . Polypenco K-51, chlorinated polymer, provides fabricator and user of chemical processing equipment with properties possessed only by more costly materials like fluorocarbons: Superior resistance to acids, alkali, H_2O_2, toluene, etc.; virtually no water absorption; good stability; useful above 250 F. in non-oxidizing atmospheres; heat distortion temperature in same class as FM 10001 nylon (185 F. for 264 psi. load, 300 F. for 66 psi. load.—*Polymer Corp. of Pennsylvania, Reading, Pa.*

Curing Agent

Epoxy resin hardener is fire resistant, has high-temperature strength. (93E)

. . . HET Anhydride, hardener or curing agent, works in a 50-50 mixture with epoxy resins, an unusually high ratio. But, more important, unique combination of fire resistance and strength at high temperatures makes HET Anydride-cured epoxy castings, printed circuits, laminated dies for metal and plastic forming usable under more severe conditions than before. —*Hooker Electrochemical Co., Niagara Falls, N. Y.*

Dibutyl Fumarate

For brittle and soft resin production. (93F)

. . . Dibutyl fumarate, available in quantity, is a more active monomer than the corresponding maleate and can produce polymers varying from hard, brittle resins to soft, internally plasticized, plastic materials. Copolymers with vinyl acetate give outstanding results in emulsions for water paints.—*Chemical Div., Borden Co., New York 17, N. Y.*

Difunctional Ester

Copolymerizes with variety of monomers. (93G)

. . . Monomer MG-1 acts as an efficient dispersant for vinyl chloride dispersion type resins, but polymerizes during resin fusion to a hard material which retains no plasticizing action. It can be copolymerized with styrene, vinyl chloride, vinyl acetate, acrylates. Possible applications: paper and leather impregnation, calendering, extrusion, other hot-processing techniques.—*Carbide and Carbon Chemicals Co., New York 17, N. Y.*

RESINS & PLASTICS, continued

Epoxies, Long-Chain

Undergo ring opening, polymerization, isomerization. (94A)

. . . Three long-chain epoxidized olefins—octylene oxide, dodecene oxide and C_{16}-C_{18} oxides—will undergo reactions such as polymerization, isomerization, reduction and ring opening with a variety of active hydrogen compounds. They should be of interest as reactive solvents and diluents for epoxy resins, intermediates in manufacture of plastics, surfactants, lubricants, etc.; acid scavengers, corrosion inhibitors; stabilizers for chlorinated compounds; organic synthesis intermediates.—*Becco Chemical Div., Food Machinery and Chemical Corp., Buffalo, N. Y.*

Epoxies, Embedding

Used in electrical, electronic insulation applications. (94B)

. . . Randac epoxy resins can be used in coating and encapsulating, corona control, sealing, cast embedding of electrical parts and electronic assemblies. R-4060 is a general purpose, rigid type reinforced with low-loss inert filler. R-4059 is 100% reactive, mineral-filled, thermosetting liquid for room-temperature applications. R-4053 is 100% solid resin containing mineral filler.—*Mitchell-Rand Insulation Co., New York 7, N. Y.*

Hardeners, Liquid Epoxy

Have long pot life, need no refrigeration. (94C)

. . . Elimination of awkward handling techniques common with solid epoxy hardeners is the chief advantage offered by two homogeneous liquid hardeners, Dion RP-7 and Dion RP-22. These easy-to-handle liquids also have relatively long pot life and require no refrigeration. Below 60 F. they crystallize and must be warmed before use. Dion RC-7 ranges in price from $5 per lb. in 1-lb. jars down to $3.30 per lb. in 5-gal., 5-lb. cans for 500-lb. orders and up, f.o.b. California. Comparable prices for Dion RP-22 are $5 and $2.40.—*Chemical Process Co., Redwood City, Calif.*

Insulation, Epoxy

For on-the-job weather proofing of electrical cable splices. (94D)

. . . Thoxene Clamp-Coat, a hard-setting epoxy insulation, provides weatherproof, abrasion-resistant coating with high electrical insulation. Application of coating is simple—just mix Clamp-Coat's two separate components, cover cable splice and allow coating to harden for 2-3½ hr. In addition to abrasion resistance, coating is highly resistant to moisture and impact. Aside from electrical applications, Clamp-Coat is used as an impervious sealing medium for gas lines.—*Shell Chemical Corp., New York, N. Y.*



Plasticizer

Imparts low-temperature flexibility, light stability to vinyls. (94E)

. . . Flexol plasticizer 10-A offers reduced volatility, improved resistance to water extraction and ability to impart excellent low-temperature flexibility and light stability to vinyls. It can be used in calendered film and sheeting, dip coatings, electrical insulation, as a plasticizer for nitrocellulose, softener for both synthetic and natural rubber. Price: 42.5¢/lb. (tank car).—*Carbide and Carbon Chemicals Co., New York 17, N. Y.*

Plasticizer

Has polar, nonpolar groups. (94F)

. . . Esterflex B-1 plasticizer contains both polar and nonpolar groups, combines advantages of several classes of plasticizers into one general-purpose product. B-1 has high solvating properties, particularly for polyvinyl chloride compounds.—*Swift & Co., Hammond, Ind.*

Plasticizer, Epoxy

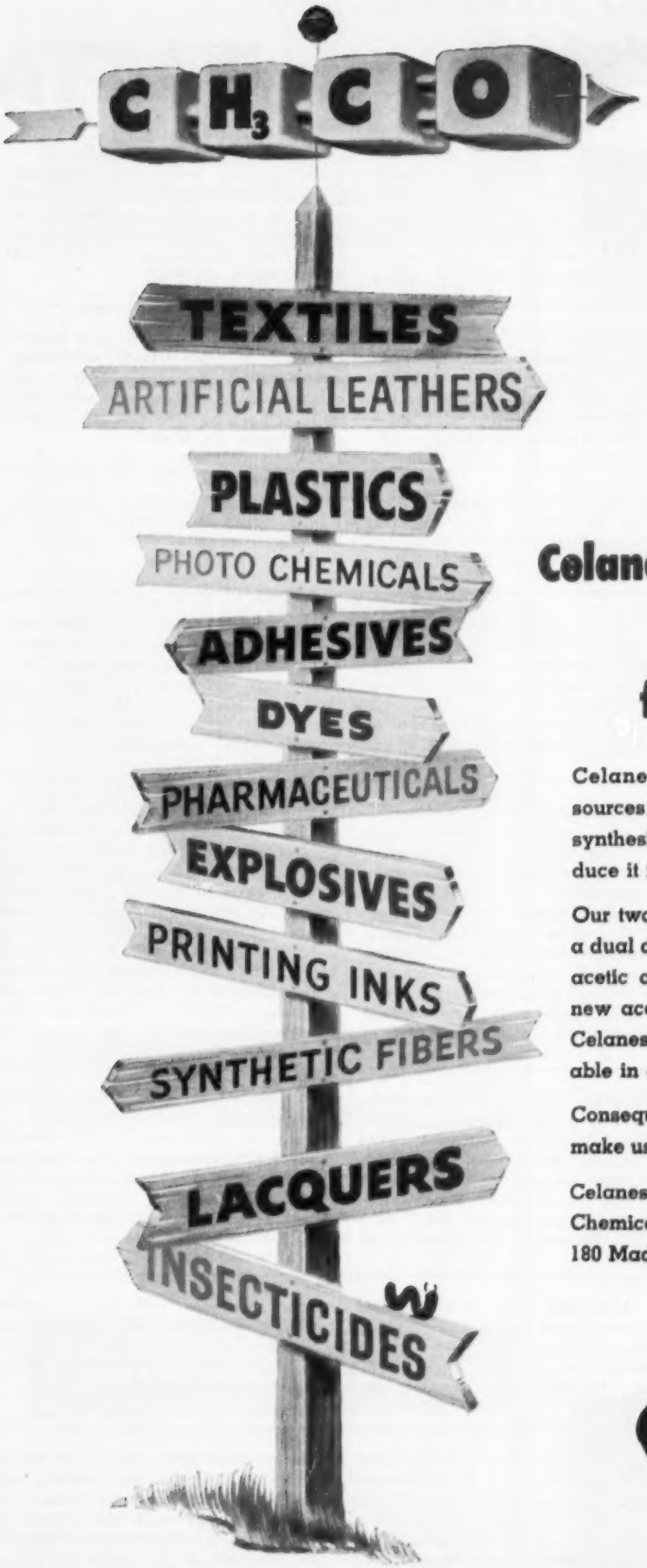
Stabilizes lacquers, vinyls against heat, ultraviolet. (94G)

. . . Marked alcohol solubility; higher viscosity; greater resistance to gasolines, aliphatic solvents and oils distinguish Estynox 308 from other epoxidized oils. 308 stabilizes nitrocellulose, ethylcellulose, cellulose acetate butyrate, polyvinyl chloride, chlorinated and synthetic rubbers against heat, ultraviolet light.—*Baker Castor Oil Co., New York 5, N. Y.*

Plasticizer, Nitrocellulose

Better than DBP. (94H)

. . . Plasticizer 84, an octyl butyl phthalate nitrocellulose plasticizer is superior to dibutyl phthalate (DBP) in permanence, heat sealability, cold check resistance.—*Eastman Chemical Products, Inc., New York 17, N. Y.*



Celanese* acetyl production *delivers*— for all industries

Celanese, dependent only on natural petroleum sources and Celanese-produced intermediates, can synthesize every important acetyl chemical and produce it in continuous volume.

Our two plants—at Bishop and Pampa, Texas—are a dual dependable source for all industries that need acetic acid, acetaldehyde, or any other acetyl. As new acetyl chemicals become commercially useful, Celanese is in a basic position to make them available in commercial quantities.

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RESINS & PLASTICS, continued

Plasticizer, Phthalate

In commercial production. (96A)

. . . Di-isodecyl phthalate, primary plasticizer for most resins, is in commercial production. Phthalate shows much less volatile loss than other widely used plasticizers, retention of low-temperature properties in aging tests, imparts permanent flexibility, good low-temperature flexibility, heat and light stability, low-migration and low water extraction.—*Ohio-Apex Div., Food Machinery and Chemical Corp., Nitro, W. Va.*

Plasticizer, Phthalate

Highly stable and permanent. (96B)

. . . Low-volatility Cabflex HS-10 is an alkyl aryl phthalate plasticizer. It requires no antioxidant, is highly resistant to oxidation and heat breakdown, has electrical properties superior to dioctyl phthalate (DOP). HS-10 is compatible with cellulose acetate butyrate, cellulose nitrate, polymethyl methacrylate, polystyrene, polyvinyl chloride, PVC acetate and polyvinylidine chloride.—*Godfrey L. Cabot, Inc., Boston 10, Mass.*

Plasticizers

Have good flexibility at low temperatures. (96C)

. . . Three plasticizers impart good flexibility at reduced temperatures, are low in volatility at high temperatures. NL-F22 is a normal phthalate ester of the semipolymeric type; NL-F32, a mixed alkyl adipate; NL-F33, an alkyl adipate ester complex.—*National Lead Co., New York 6, N. Y.*

Polyacrylate Solution

Deposits water-resistant, durable film. (96D)

. . . Hycryl A-1000, water solution of modified polyacrylate surpasses casein, substituted celluloses or ordinary polyacrylate solutions as a dispersant and binding material as far as particle suspending properties, film flexibility and water resistance upon drying are concerned. It reduces or eliminates need for protein stabilizers in formulating pigment dispersions, deposits a dried film which won't discolor and isn't affected by sunlight or normal aging conditions.—*Union Bay State Chemical Co., Cambridge, Mass.*

Polybutadiene, Liquid

Exceptionally reactive. (96E)

. . . Unusual structure of liquid polybutadiene, a highly unsaturated polymer sprinkled with cyclo-olefinic rings, is thought to account for its exceptional reactivity and high aptitude for use in casting and laminating resins, protective coatings and as a vulcanizable rubber softener. Heating liquid to 500 F. in absence of air forms highly cross-linked, transparent resin which shows little or no deterioration at temperatures as high as 600 F. Resins adhere well to glass, can be used as binders for preparation of fiber-glass reinforced laminate. Protective coating with high gloss and strong, hard finish can be produced by adding common metallic drier and mineral solvent to liquid butadiene. Liquid polymer's lack of odor and taste plus its chemical resistance point toward its use in food can enamels. — *Phillips Petroleum Co., Bartlesville, Okla.*

Polyester, Clear

Resists ultraviolet light and weathering. (96F)

. . . Greater transparency in glass-fiber reinforced laminates is obtainable through use of Paraplex P-444 over conventional resins. In blends with styrene monomer or vinyl toluene, P-444 has, when cured, a refractive index of 1.546 compared with glass at 1.548. It resists discoloration by ultraviolet light and outdoor erosion. Its laminates show little visible evidence of glass-fiber reinforcement. Therefore it's especially recommended for glass-reinforced corrugated panels, flat sheet, awning requiring good weathering properties.—*Rohm & Haas Co., Philadelphia 5, Pa.*

Polyethylene

Stiff, dense, low softening. (96G)

. . . Alkathene HD is a modified Alkathene geared for general purpose molding. Advantages: Sterilization for 15 minutes at 110 C. without distortion; thinner wall sections; improved stiffness and finish; higher working pressures and temperatures for extruded pipe work; less permeable film.—*Imperial Chemical Industries, London, England.*

Polyethylene, Flame-Sprayed

Via simplified method. (96H)

. . . An easier and surer way to flame-spray polyethylene is possible with Pyrothene, a polyethylene compounded with special additives. Pyrothene is first melted in special automatic equipment, then sprayed as a liquid on to a target that needs only to be heated to 150-190 F. Final step involves baking for bonding. Results: More adherent coatings with less chance of decomposition.—*Pyrocote Chemicals Inc., Bayside, N. Y.*

YOUR CONDENSED CATALOG OF

ATLAS organic chemicals

SORBITOL *and related polyols*

Sorbitol, hexahydric alcohol, $C_6H_8(OH)_6$ is synthesized by hydrogenation of sugar. Available in tonnage quantities at stable, low cost. Purity and uniformity are assured by advanced quality control techniques. It is used—

As a moisture conditioner for such products as candy, cosmetic creams and lotions, tobacco, glue compositions.

As a bodying agent for liquid pharmaceuticals, beverages, and other liquid products.

As a starting material for synthesis of alkyd resins, surfactants and vitamin C (ascorbic acid).

Atlas polyols for a wide variety of applications

For Foods, Pharmaceuticals, Cosmetics, Chemical Synthesis

SORBO®—70% sorbitol solution

Crystalline sorbitol—powdered or pellets

Mannitol—non-hygroscopic isomer of sorbitol, powdered

For Industrial Applications, including Tobacco, Glue, Cellulose, etc., requiring increased resistance to crystallization

Sorbitol Special—76% solution of sorbitol and its anhydrides

ARLEX®—non-crystallizing solution of sorbitol and related polyols, 83% solids

G-2401—non-crystallizing 85% solution of hydroxypropyl sorbitol

DARCO® ACTIVATED CARBONS

For purifying, deodorizing and decolorizing. Used in production of sugar, beer, drugs, edible oils, chemicals, electroplating baths, dry cleaning solvents and water supplies. High bulk density provides long filter cycles. Careful control of particle size gives fast filtration. Low retention loss—holds back a minimum of refined product.

ATLAC® 382 POLYESTER RESIN

A different kind of polyester, based on bis-phenol, ATLAC 382 resin offers distinct advantages in glass-reinforced plastics. It can be used with a variety of cross-linking monomers to obtain many useful products. It has excellent chemical resistance, high heat distortion point, freedom from odor . . . is used as the sole resin, or in combination with others to upgrade formulas.

ATLAS SURFACTANTS

Leader in the development and manufacture of surface active agents, Atlas produces more than 100 different non-ionic and ionic types—including emulsifiers, wetting agents, spreading agents, solubilizers, detergents, penetrants, anti-foaming and anti-static agents.

The HLB (Hydrophile-Lipophile Balance) system pioneered by Atlas saves laboratory time, by providing a mathematical method for selecting surfactants or blends for specific uses.

Included in the Atlas line of surfactants are the following basic types:

General Purpose

SPAN® products—sorbitan esters of fatty acids

TWEEN® products—polyoxyethylene sorbitan esters of fatty acids

BRIJ® products—polyoxyethylene ethers of fatty alcohols

MYRJ® products—polyoxyethylene stearates

Agricultural Specialties

ATLOX emulsifiers for pesticide concentrates

Detergent Specialties

RENEX® detergents—a broad range of liquid and solid non-ionics, including polyoxyethylene esters, ethers, and ether-alcohols.

Cosmetic Specialties

ARLACEL® sorbitan and glycerol fatty acid esters

Lanolin derivatives—water-dispersible

Beeswax derivatives—for soap-free cold creams

Textile Specialties

For compounders of lubricants, softeners, anti-static agents

Pulp and Paper Specialties

Detergents, wetting and re-wetting agents

Food Specialties

ATMUL® mono- and diglyceride emulsifiers

Petroleum Production & Refining Specialties

AQUANESS drilling fluid emulsifiers, desalting compounds, emulsion breakers, water-block removal agents, corrosion inhibitors

Write to Atlas for technical data on any of these materials . . . for samples for test . . . and for recommendations on application.

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WILMINGTON 99, DELAWARE

In Canada: Atlas Powder Company, Canada, Ltd., Brantford, Ontario, Canada

RESINS & PLASTICS, continued

Polyethylene, High-Strength

5 to 8 times stronger at high temperatures. (98A)

. . . Addition of reinforcing fillers to irradiated polyethylene boosts poly's tensile strength at high temperatures, cuts creep deformation by 90%. Compared with high-grade, unfilled, unirradiated poly which melts below 300 F., new poly can support more than 500 psi. at the same temperature. High-strength poly has excellent chemical and corrosion resistance, low-temperature flexibility, non-melting characteristics—features common to irradiated polyethylene. — *General Electric Co., Schenectady 5, N. Y.*

Polyethylenes

Highly crystalline. (98B)

. . . Alathon 34 and Alathon 37 are claimed to have higher crystallinity than that available in any resins now on the market. 34 has greater clarity, stiffness, sparkle and high permeability which make it useful in film applications—soft goods packaging, coatings, etc. Stiffness and resistance to heat distortion make it suitable for bottles and containers. Alathon 37 is a high-flow poly for general-purpose molding, useful in applications where fast cycle, high gloss and stiffness, resistance to heat distortion are required.—*E. I. du Pont de Nemours & Co., Wilmington 98, Del.*

Polystyrene Beads

Can be molded into any shape. (98C)

. . . German-developed polystyrene foam, to be known as Uni-Crest, is basically identical to and possesses properties similar to that of Styrofoam. But is has added advantage in that it can be molded into any shape or form. Finished product is made from beads resembling coarse sugar grains. When expanded and welded together, beads form a homogeneous, snow-white product composed of minute individually closed cells. Product is lightweight, can be laminated with wood, steel, aluminum, plastic; is odorless, non-toxic, easy to cut.—*United Cork Companies, Kearny, N. J.*



Polystyrenes

Four new Styrons. (98D)

. . . Four new members of Styron family are Styron 665, 689, 440 and 429. 665 and 689 are general purpose formulations with improved flow and extrusion properties. 440 and 429 are high-impact materials with improved surface finish and heat resistance.—*Dow Chemical Co., Midland, Mich.*

Resin, Alkyd

Improves quality of industrial baking enamels. (98E)

. . . Duraplex ND-76, an alkyd resin, lends greater color stability resistance to alkalis and soaps and mar resistance to enamels formulated with it. This is particularly desirable for white enamels for refrigerators, etc. Here's how formulations incorporating the new alkyd compare with enamels based on other high quality alkyd resins: Tukon hardness—50 to 100% greater; gloss retention—100% higher; reduced blistering from immersion in hot household soaps and syndets.—*Rohm & Haas Co., Philadelphia 5, Pa.*

Resin, Polyethylene

More rigid, wear resistant. (98F)

. . . Greater density accounts for DXM-103's superiority to polyethylene resin competition: Greater rigidity, improved tensile strength, increased surface hardness, improved resistance to wear and staining, slightly reduced permeability. Potential markets include caps and closures for acids, caustics, oils, cosmetics, etc.—*Bakelite Co., New York 16, N. Y.*

Resins, Epoxy

For corrosion-resistant surfaces. (98G)

. . . Four epoxy resins, members of a new series of epoxies for corrosion-resistant surface coatings, offer excellent adhesion and resistance to weather, salt spray, corrosive fumes and chemicals. Two of the new resins, EKRA-2002 and EKSA-2002, react with amines, polyamides and urea-formaldehyde resins. The other two resins, EKRD-2003 and EKRA-2053, also undergo usual epoxy reactions.—*Bakelite Co., New York 16, N. Y.*

Resins, Polyethylene

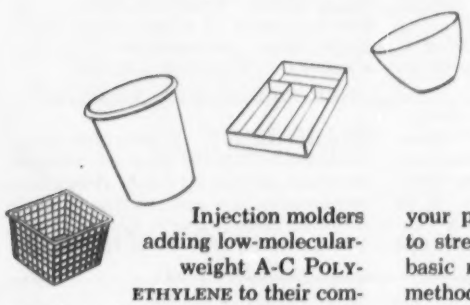
Meet numerous electrical specs. (98H)

. . . Three compounds in the Petrothene(R) series—300, 301, 302—meet a variety of electrical specs including line wire covering, high frequency and high voltage insulation. Available in uncompounded and compounded grades.—*U. S. Industrial Chemicals Co., New York 16, N. Y.*



Injection molders- control flow

get improved quality, reduced costs



Injection molders adding low-molecular-weight A-C POLYETHYLENE to their compounds are turning out better looking articles faster and at lower costs!

A-C POLYETHYLENE, when correctly combined with the proper polyethylene molding resin, gives you better control of flow and lets you use reduced pressures when filling both large cavity molds and small cavity molds that are difficult to fill . . . yet your products retain the resistance to stress cracking inherent in your basic resin! Ask us for the correct method of tailor-making a polyethylene of proper melt index to suit your particular needs.

Molders report that the addition of as much as 25% A-C POLYETHYLENE gives them:

1. **Improved gloss**
2. **Better color dispersion**
3. **Greater rigidity**
4. **Production increased up to 60%**
5. **Lower cost**

Because A-C POLYETHYLENE permits the use of lower operating pressures, molders are experiencing less machine stress, too!

To get these advantages for your product, return the coupon for samples, literature and price lists on A-C POLYETHYLENE. Technical sales representatives are available from coast to coast and in Canada. For addresses, phone numbers, ask for Bulletin 116.



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RESINS & PLASTICS, continued

Resins, Vinyl Chloride

Lower in price. (100A)

. . . Domestic vinyl chloride-vinyl acetate copolymer price has been cut from 38¢ per lb. to 31¢ per lb. to encourage market expansion necessary to accommodate new industry capacity and to compete with 32¢ of imported product. Solvent resin types have been reduced 1-3¢/ lb.; emulsion types, 6-7¢/lb.—*Union Carbide and Carbon Corp., New York, N. Y.*

Sealant, Resin

Saves in production and cycle time. (100B)

. . . Polyester sealant, Impco RC-2, offers savings in production (20%) and cycle time (40%) in sealing porous metal castings. Compared with conventional sealants requiring 8-hr. production cycles and several recyclings for complete seal, RC-2 does the job in 5 hr. with one cycle. It also minimizes sealant bleeding from casting pores—a fire hazard and time- and labor-consuming procedure.—*Bakelite Co., New York* 16, *N. Y.*

Solvent, Epoxy

Nonflammable. (100C)

. . . With solvent for cured epoxies and polyesters you can salvage valuable parts from defective units potted in those resins. Monastrip EP is noncorrosive, nonflammable, reusable.—*Mona Industries, Inc., Paterson, N. J.*

• Rubber and Rubber Chemicals

Dicumyl Peroxide

Sulfur substitute in rubber vulcanization. (100D)

. . . Di-Cup, dicumyl peroxide, vies costwise and performance-wise with sulfur in vulcanization of general purpose rubber. Outstanding aging resistance of Di-Cup cured rubber is as good, even without antioxidants, as that of sulfur stocks with PBNA added. Di-Cup has better low temperature service, doesn't discolor or increase capacity of stocks. Limitation: High cure temperatures.—*Hercules Powder Co., Wilmington* 98, *Del.*

Fillers, Carbon Black

For silicone rubber. (100E)

. . . Carbon black fillers for silicone rubber (instead of conventional silicas) can provide satisfactory reinforcement thanks to Linde's W-96 Silicone, a gum stock featuring controlled reactivity. Carbon-black filled silicone rubbers compare favorably with silica-filled rubbers on basis of hardness, tensile strength, elongation, compression set and brittle point.—*Silicones Div., Union Carbide and Carbon Corp., New York, N. Y.*

Fortified Rubber

Defies salt and volts. (100F)

. . . Modified butyl rubber, bolstered by a chemical additive, is a high voltage insulator (15 kv. and above) in all kinds of weather. Secret: Elimination, via the additive, of "tracking" (formation of free, corrosive, carbon which causes deterioration of insulation). Example of insulation's success: High voltage transformer insulated with Hy-Bute/60 rubber survived 1,400 hr. at high voltage in spray chamber. Rubber's strength as insulator means elimination of oil-filled metal casings, porcelain bushings, gaskets; a smaller, lighter transformer that lasts longer, and requires much less maintenance. —*General Electric Co., Schenectady* 5, *N. Y.*



Hevea-Like Rubber

Superior in thermal stability, cracking resistance. (100G)

. . . Coral rubber, a synthetic natural rubber, is cis-1,4 polyisoprene containing neither the trans-1,4 isomer nor distinguishable amounts of the 1,2 structure. Though chemically and structurally similar to natural Hevea, Coral excels in thermal stability, oxygen absorption, resistance to cracking in tire treads. It has low hysteresis, high gum tensile, good retention of physical properties at temperatures from 212 to 275 F. Prime market will be heavy-duty tires.—*Firestone Tire and Rubber Co., Akron* 7, *Ohio.*

Latices, Nitrile

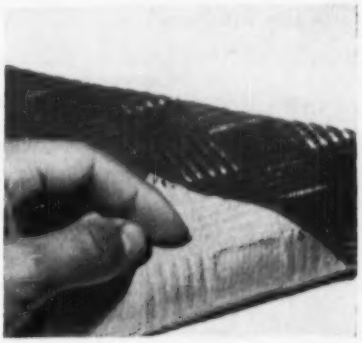
Upgrade products. (101A)

. . . Chemigum Latex 236 and 246 are two nitrile latices designed to upgrade physical properties of paper, textile, leather, pigment products. Small particle size (average of 500 Angstroms) combined with high mechanical stability, gives greater coverage and closer contact with individual fibers.—*Goodyear Tire & Rubber Co., Inc., Akron 16, Ohio.*

Latices, Nitrile

Consumption up for binders for nonwoven fabrics. (101B)

. . . Consumption record for nitrile latices in chemical, textile and related fields jumped from 4 million pounds in the first six months of 1954 to 6.5 million for the same period in 1955. Credit for increase goes to use of latices in manufacturing nonwoven fabrics as backing for vinyl sheet. Latices are also being used in greater quantities as carpet backing materials and in combination with other latex products for improvement in textiles. Rugs and carpets are made more durable, ravel-free, resistant to cleaning solvents.—*Goodyear Tire & Rubber Co., Akron 16, Ohio.*



Nitrile Rubber

Resists discoloring. (101C)

. . . Chemigum N6B, a light-colored nitrile rubber, is a non-staining, non-discoloring version of standard Chemigum N6 with superior resistance to discoloration. It's ideal for light-colored applications like flooring, clear cements, applications where resistance to ultraviolet light or photochemical degradation is needed.—*Goodyear Tire & Rubber Co., Akron 16, Ohio.*

Plasticizer, Low-Temperature

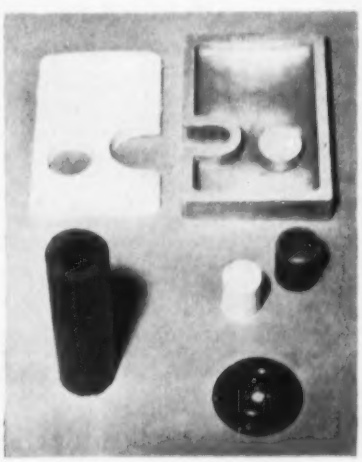
For both synthetic and natural rubber. (101D)

. . . Triethyl glycol dipelargonate, under the commercial name of Plastolein 9404 TGP, is a low-temperature plasticizer for synthetic and natural rubber. Compared with other triglycol esters and adipates, it gives lower heat loss, less water sensitivity, lower compression set and equivalent low-temperature flexibility.—*Emery Industries, Cincinnati 2, Ohio.*

Polyurethane Rubber

Resists chemicals, gases, abrasion; simple to formulate. (101E)

. . . Polyrubber, a polyurethane, is formulated simply at room temperature by adding an isocyanate catalyst to a polyester resin base. It can assume densities of 3 to 53 cu. ft./lb., possesses elongation characteristics of zero to 300%, ranges from a hard material to one with a soft, open-cell structure similar in many ways to foam rubber. Polyrubber also has chemical advantages over natural rubbers and most synthetics. It has a high degree of resistance to temperature extremes (−40 to 300 F. without change), dilute acids, most solvents, oils, aromatic fuels, etc. And it's virtually impervious to sunlight and salt water. Since no plasticizers are required, resistance to oxidation is high. Unlike other rubbers or synthetics, it can be molded to another piece of the same material without special equipment. Polyrubber is now being used for everything from arm rests to pump diaphragms.—*American Latex Products Corp., Hawthorne, Calif.*



Polyurethane Rubber

Promises greater serviceability. (101F)

. . . Adiprene B urethane rubber has topnotch toughness and abrasion resistance; doesn't become brittle even at −90 F.; resists deterioration by oils, oxygen, ozone, weathering. It differs from other isocyanate rubbers like Chemigum SL in that it's based on an aliphatic polyether, not a polyester, and can be reinforced with carbon black and silicas for improvement.—*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

RUBBER & RUBBER CHEMICALS, continued

Sampler Kit

For elastomeric materials. (102A)

. . . Sampler kit of rubber and elastomeric materials compounded, milled and calendered in ARco mills offers variety of standard compounds used in corrosion and abrasion resistant lining work. Sampler is 3½x8½-in. folder.—*Automotive Rubber Co., Inc., Detroit 39, Mich.*

Silicone Rubbers

Have twice the tear and tensile strength of conventional silicone rubbers. (102B)

. . . Cohrlastic HT-655 and HT-666 overcome major defects of conventional silicone rubbers—low tear strength and poor abrasion. HT-655 is particularly designed for high-temperature work, remains flexible at —65 F. At room temperature its tear strength is 197 lb./in., tensile strength is 1,650 psi., elongation is 900%. HT-666 has original properties equal to or better than those of 655 in tear resistance, slightly lower in tensile strength and elongation. It has outstanding low-temperature flexibility at —100 F.—*Connecticut Hard Rubber Co., New Haven 9, Conn.*

Silicone Rubbers

Three have same shrinkage as organic rubber, two good for sponge rubber. (102C)

. . . SE-361, SE-371, SE-381 make possible, for first time, molding of silicone rubber parts in same molds used for organic rubber parts. They also permit specification of closer tolerances with silicone rubber. All three may be cured equally well by mold, air vulcanization or steam methods. Two sponge compounds, 81597 and 81601, allow greater flexibility in production operation by greatly increased time lapse between freshening-forming step and cure—with little or no loss in resulting expansion.—*Silicone Products Dept., General Electric Co., Waterford, N. Y.*

Silicone Rubber

Fully meets aeronautical specifications. (102D)

. . . X-1034R silicone rubber compound fully meets requirements of Aeronautical Materials Specification 3301B, something no previously available compound has been able to do. Compound is easy to handle, exhibits excellent resistance to high temperatures, has low compression set and moisture pickup. Also available is easy-to-use catalyst, X-1960 silicone rubber curing compound which minimizes precautions which must be taken with liquid di-tertiary-butyl peroxide itself (produces fumes leading to flash fires). It's to be used only with Carbide silicone rubbers.—*Silicones Div., Union Carbide and Carbon Corp., New York, N. Y.*

Silicone Rubbers

Two for fast thick section curing, two for steam resistance. (102E)

. . . K-1025 and K-1028 are general purpose silicone rubber compounds which can be used for rapid, one-step thick section curing with the new catalyst, di-tertiary-butyl peroxide (DTBP). Both compounds have very low compression set (without need for toxic additives). Both meet or exceed Aeronautical Materials Specifications and ASTM specs. K-1035 and K-1038 offer good live steam resistance and low moisture absorption. Both are suitable for general molding and extrusion, have low compression set.—*Silicones Div., Union Carbide and Carbon Corp., New York, N. Y.*

Synthetic Rubber

Has same structure as natural product. (102F)

. . . X-ray diffraction photos prove that Ameripol SN synthetic rubber molecule has the same structure as that of a tree rubber molecule. Ameripol is giving service comparable to that of tree rubber in large truck tires, the only tires in which synthetic rubbers haven't been entirely satisfactory.—*Goodrich-Gulf Chemicals, Inc., Cleveland 3, Ohio.*

Synthetic Rubber

Butadiene-type. (102G)

. . . Cis 1,4 polybutadiene gives promise of providing an economic alternate for natural rubber in many uses. Heat buildup in Goodrich flexometer is 20 F. below that of standard GR-S cold rubber. Resilience is 10-15% better than GR-S and freeze point is much lower. Rubber is easily compounded by standard techniques, has excellent balance of other physical properties. Another synthetic rubber, trans 1,4 polyisoprene, is counterpart of gutta percha and balata.—*Phillips Petroleum Co., Bartlesville, Okla.*

Synthetic Rubbers

May be cheaper than others. (102H)

. . . Alfin butadiene rubber (no styrene) can take up to 1½ times its weight in oil and still retain qualities of good rubber, making for a definite cost advantage. Oil-extended rubber shows tensile strength, elongation and tear resistance of synthetic rubbers and is compatible with them as well.—*Massachusetts Institute of Technology, Cambridge, Mass.*

U. S. INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation, 99 Park Ave., N.Y. 16

Complete technical information on any of the U.S.I. products described here is available in the form of booklets and data sheets and in U.S.I.'s two catalogs—"Chemicals," and "Alcohols." Write for your copy.

PRODUCT AND CHEMICAL FORMULA	Distillation Range Limits in deg. C.	Flash Point (open cup) in deg. F.	Evaporation Rate Minutes	Acidity: Free acid, not more than—	Specific Gravity 20°/20°C.	APPLICATIONS	CONTAINERS
ALCOHOLS							
Ethanol (Ethyl Alcohol) C_2H_5OH	Ethyl Alcohol—U.S.P.—190 Proof and Absolute 200 Proof All regular and anhydrous formulas of specially and completely denatured alcohol						8,000-gal. tank cars, 30,000-lb. drum cars, 3x2,000-gal. compartment tank cars, tank wagons, 55- and 5-gal. drums, 1 gal. cans.
Butanol (Normal Butyl Alcohol) C_4H_9OH	115–118	115	67	.005% as acetic	0.810–0.813	A strong solvent for many organic materials. Slow evaporation rate makes it particularly important as latent solvent for nitrocellulose and resins. Chemical synthesis.	Same as ethanol.
Amyl Alcohol, Refined	128–132	127	....	.01% as acetic	0.811–0.815	Raw material for manufacture of fine chemicals, pharmaceuticals.	Same as ethanol.
Fusel Oil, Refined	110–135	123	103½	.01% as acetic	0.811–0.815	A blend of amyl alcohols refined by chemical treatment and distillation.	Same as ethanol.
***Seiox** (Proprietary alcohol-type solvent: Regular, 190 proof. Anhydrous, 200 proof)	....	71	....	.02 gm. per 100 cc. as acetic	0.816† (Reg.) 0.796† (Anhy.)	Shellac solvent and general solvent, fuel oil conditioner, cleanser, cleaning compounds, lacquers, paint removers, polishes, etc. In spirit varnishes and in purification, extraction and crystallization processes.	Pt., qt., gal. cans; 5-gal., 55-gal. steel drums. Also tank wagon to users having authorization of ATTD, Internal Revenue Service.
***Filmex**	70–81	60	....	0.02 max.	0.814 max.	Special proprietary denatured alcohol solvent authorized for use in specialized industries.	5-gal., 55-gal. steel drums. Also tank wagon to users having authorization of ATTD, Internal Revenue Service.
SOLVENTS							
***Ansol M** (Blend of Ethanol, esters and hydrocarbons)	70–90	52	14.5	.01% as acetic	0.796–0.800	Anhydrous solvent for many resins not soluble in ethanol alone, solvent for 88 nitrocellulose. Used as lacquer solvent and thinner in dopes, plastic cements, celluloid, cleaners, paper, lacquer, thinners, linoleum, varnish, etc.	Same as ethanol except 36,000-lb. drum cars.
***Ansol PR** (Blend of anhydrous denatured ethanol, esters, and hydrocarbons)	70–90	54	9	.01% as acetic	0.841–0.845	Anhydrous solvent comparing favorably with ethyl acetate in solvent power, evaporation rate, boiling point and odor. Used as lacquer solvent and thinner in dopes, celluloid, paper, cleaners, decalcomanias, linoleum, cement, paint removers, varnishes.	Same as ethanol except 36,000-lb. drum cars.
Other special solvent blends—Specifications on request.							
Butyl Acetate Normal $CH_3COOC_4H_9$	115–135	100	34.75	.01% as acetic	0.874–0.878	Most widely used medium-evaporating nitrocellulose solvent. Used in airplane dopes, artificial pearl, celluloid, cements, coated paper, lacquers, plastic wood, thinners, leather finishes, linoleum, textile sizing, etc.	Same as ethanol.
Ethyl Acetate $CH_3COOC_2H_5$ Commercial, 85–88% (95–98%, 99%, and U.S.P. also available)	70–80	42	11.25	.01% as acetic	0.882–0.886	Excellent solvent for cellulose esters, resins, etc. Also used in acetic acid extraction, candy glaze, cleaners, denatured alcohols, flavorings, perfumes, rayon, pharmaceuticals, smokeless powder, paint removers, spirit varnishes, etc.	Same as ethanol.
Ethyl Ether, U.S.P. $(C_2H_5)_2O$ (Also absolute A.C.S., Refined and Technical grade)	.....	Below 0°F.	....	=0.4 cc. 0.02N NaOH per 100 cc.	.713–.716	Widely used in manufacture of smokeless powder and in extracting fats. An essential laboratory reagent. Chemical synthesis.	48,000-lb. tank cars, 30,000-lb. drum cars, 55- and 5-gal. steel drums.
Acetone $(CH_3)_2CO$	55.6–57.1	14	5.5	.002% as carbon dioxide	0.791–0.799	A solvent for cellulose acetate and the whole range of nitrocellulose lacquers. Used as a raw material in pharmaceuticals, dyes, and plastics; and as a dewaxing agent for lubricating oils. Chemical synthesis.	Same as ethanol.
Diethyl Oxalate $(COOC_2H_5)_2$	180–190	168	....	.05% as oxalic	1.075–1.079	Used in radio tube cathode coating, to prevent rapid drying of nitrocellulose printing inks, etc. Also in organic syntheses.	Same as ethanol except 36,000-lb. drum cars.
Diatol* (Ethyl Carbonate 90%)	100–130	82	35	.02% as carbonic	.954–.957	A nearly-neutral, mild-odor, medium-evaporating nitrocellulose solvent, used in lacquers, radio tubes, etc.	Same as ethanol except 36,000-lb. drum cars.
Diethyl Carbonate $(C_2H_5)_2CO_3$	120–130	115	34.75	.02% as carbonic	.973–.977	Similar to Diatol*, also in synthesizing phenobarbital and other organics.	Same as ethanol except 36,000-lb. drum cars.

* Registered Trademark.
† 60°/60°F.

U. S. INDUSTRIAL CHEMICALS CO. Division of National Distillers Products Corporation

U. S. I. INTERMEDIATES

PRODUCT	FORMULA	COLOR	MELTING POINT (Deg. C.)	PURITY	APPLICATIONS	CONTAINERS
Acetoacetanilide	$CH_3COCH_2CONHC_6H_5$	White	82.5	97%	Manufacture of yellow dyes such as Hansa and benzidine yellows.	200
Acetoacet-ortho-chloranilide	$CH_3COCH_2CONHC_6H_4Cl$	White	102.5	97%		250
Acetoacet-ortho-toluidide	$CH_3COCH_2CONHC_6H_4CH_3$	White	104–105	96%		250
Ethyl Acetoacetate	$CH_3COCH_2COOC_2H_5$	Nearly water white		96.5%		
Ethyl Benzoylacetate	$C_6H_5COCH_2COOC_2H_5$	Light yellow	Dist. Range 144–148 at 10 mm. pressure	95%	Manufacture of dyes and pharmaceuticals, organic syntheses.	55- and 5-gal. drums 1-gal. bottles.
Ethyl Sodium Oxalacetate	$C_2H_5OOCC(ONa):CHCOOC_2H_5$	Light yellow	....	92%	As a highly reactive intermediate in production of ore-refining flotation agents and other organic syntheses.	Fibre drums, net weight 175 lbs.
Ethyl Chloroformate	$ClCOOC_2H_5$	Water white	....	95%		5-gal. and 3-gal. carboys.

METALLIC SODIUM

Available for immediate shipment.

Price quotations can be secured from **U.S.I.** at 99 Park Ave., or from any branch sales office.

FOR INDUSTRY

Bricks— 12, 8, 2½ and 1 lb. (55-gallon returnable steel barrels).
Solid— 400 lb. net (55-gallon nonreturnable steel drums).
Tank cars—80,000 lbs.

FOR RESEARCH AND DEVELOPMENT

Bricks—1 and 2 lb. (3½ gallon steel pails, 20 lb. net).
Solid—35 lb. net in 5 gallon steel pails.

Na Na Na Na Na

Technical Service is available upon request on all aspects of sodium chemistry and handling procedures.

LITERATURE

Handling Metallic Sodium on a Plant Scale is a comprehensive handbook covering equipment and handling procedures.

Sodium Dispersions consist of microscopic sodium particles (1-20 microns) suspended in inert hydrocarbons. Booklet covers properties, applications; tells how to prepare and handle sodium in this form on laboratory and plant scale.

High Surface Sodium on Inert Solids may be visualized as extremely thin sodium films on finely divided solid carriers. Such sodium-coated solids can carry over 30% Na; yet the films are calculated to be only 5 atoms thick. Discusses uses for this extremely reactive, free-flowing form of sodium, explains preparation, handling for laboratory and plant operations.

POLYETHYLENE RESINS

PETROTHENE® 100 Series—High-quality resins for those applications demanding outstanding properties. Especially recommended for extrusion into film and blow molding.

PETROTHENE® 200 Series—General purpose resin for extrusion, injection, compression molding and paper coating. Types 201, 202 and 203 are higher flow materials designed for large molded parts and increased production rates.

PETROTHENE® 300 Series—Resins especially adapted for wire covering and electrical insulation applications.

PETROTHENE® 500—Compounded resins especially adapted for pipe extrusion.

FEED CONCENTRATES

Antibiotic Feed Supplements—Containing guaranteed amounts of antibiotic; Bacitracin or Procaine penicillin.

Calcium Pantothenate (Feed Grade)—One of the B complex vitamins. Available in D and DL forms.

Choline Chloride—25% dry or 70% aqueous solution.

Curbay B-G*—Dried Molasses Fermentation Solubles.

Menadione (Vitamin K_3)—A dry product especially suitable for easy mixing. Compatible with other vitamins, antibiotics.

DL-Methionine (Feed Grade)—An essential sulfur containing amino acid used in high energy feeds and concentrates.

Niacin—A member of the B complex vitamin group important for efficient feed utilization.

Riboflavin Products—Natural fermentation products containing guaranteed potencies.

Special Liquid Curbay*—Molasses Distillers Condensed Solubles for poultry, hog, and dairy feeds.

Special Mixes—Combinations of methionine, antibiotics, and B complex vitamins.

Vitamin A (U.S.I. Permadry)—Has sealed-in Vitamin A with unusual biological availability.

Vitamin B_{12} Feed Supplements—Available in combination with antibiotics if desired.

Vitamin D_3—A stabilized form of Vitamin D_3 which will not lose potency during storage.

Vacatone* 80—Molasses Distillers Dried Solubles.

INORGANIC CHEMICALS

Anhydrous Ammonia—Commercial and refrigeration grades in tank cars or tank wagons only.

Caustic Soda—50% liquid in tank cars.

Chlorine, liquid—In tank cars.

Nitrogen Fertilizer Solutions—Aqueous solutions of ammonium nitrate and ammonia in all standard analyses.

Sodium, Metallic—Available in tank cars; convenient size bricks in steel barrels, pails; and cast solid in 55-gal. steel drums.

Sodium Peroxide—Dust-free granules shipped in drums.

Sulfuric Acid—All strengths from 60° Baumé to 40% Oleum. Also Electrolyte grade meeting Federal specifications. Tank cars or tank wagons only.

OTHER PRODUCTS

Ethylene, Refined and Commercial—Fuel gas; fruit ripening agent; organic syntheses; refrigerant.

Curbay X*—Core binder; combustion aid; fermentation aid.

DL-Methionine (Pharm.)—Essential amino acid for pharmaceutical use.

N-Acetyl-DL-Methionine—A salt of Methionine giving increased solubility.

Riboflavin, U.S.P.

PiB*—A unique insulation material for ignition systems.

Urethan, U.S.P. (Ethyl Carbamate)—Soporific: starting point for chemical syntheses.

"U.S.I. Isosebacic" Acid—Mixture of isomers of sebacic acid.

* Reg. U.S. Pat. Off.

U.S.I. INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation

99 Park Ave., New York 16, N. Y. ***Branches in Principal Cities***

RUBBER & RUBBER CHEMICALS, continued

Wire Coating, Urethane

Needn't be stripped before soldering. (105A)

. . . Formvar-urethane wire insulation doesn't have to be stripped off wires that are to be soldered. Urethane bond breaks at soldering temperatures (360 C.), leaving clean wire surface. Coating equals or excels Formvar-phenolics with respect to electrical properties and resistance to heat and water, but doesn't come up to them in flexibility, adhesion resistance, abrasion, heat shock.—*Shawinigan Resins Corp., Springfield 2, Mass.*

Zinc Oxide, Pelleted

For rubber manufacturers. (105B)

. . . Protex-267, pelleted zinc oxide, can be weighed quicker, poured faster, mixed more rapidly with less power, leaves less waste in emptied bag. 267 packs more densely and takes only one-third the space occupied by conventional zinc oxide.—*New Jersey Zinc Co., New York 38, N. Y.*

• Surface Active Agents

Absorbent, Silicate

Absorbs 2x its weight in liquids, yet remains free flowing. (105C)

. . . A synthetic calcium silicate, Micro-Cel, absorbs twice its own weight in liquids and still remains free flowing. Micro-Cel will absorb up to six times its weight in water before it becomes a paste. Capacity of the new absorbent puts it well ahead of clays, talcs, calcium carbonate and gives it a big edge as an absorbent-grinding aid for high concentrate insecticide wettable powders; as an anti-caking aid in fertilizers, insecticide dust, cleaners, detergents. Micro-Cel's price is 6-10¢ per lb., compared with 3-4¢ for coating clays and 1-3¢ per lb. for diatomites.—*Johns-Manville Corp., New York 16, N. Y.*



Detergents, Nonionic

Based on tallow alcohol. (105D)

. . . Nonionic detergents based on tallow alcohol are priced 20-50% below conventional fatty alcohol nonionics. Designated Siponic E-1 through E-5, they range from oil-soluble to water-soluble solids, are heat stable, resist concentrated acid and alkali.—*American Alcolac Corp., Baltimore, Md.*

Emulsifiers

For insecticides, fertilizers. (105E)

. . . Two emulsifiers, Emcol H-A and Emcol H-B allow farmers, for first time, to mix liquid fertilizers and emulsifiable insecticide concentrates properly in the field. Both products permit wide range of insecticides to be mixed with liquid fertilizers.—*Emulsol Chemical Corp., Chicago 5, Ill.*

Emulsifiers

For paint, cosmetics, plastics, etc. (105F)

. . . Witco DGL, a diethylene glycol laurate blended with modifiers, is self-emulsifying in water and a powerful emulsifying agent for other materials. It's moisture-free and doesn't evaporate at normal emulsifying temperatures or thicken on aging. In small amounts it's effective as an anti-foaming agent. Suggested uses for DGL include: paints, textiles, plasticizing. Two other emulsifying chemicals are Witco DGO, for latex and resin emulsion paint systems and Witco GMO, for dispersing alkyds in odorless paint systems.—*Witco Chemical Co., New York 17, N. Y.*

Leather Chemical

Chrome complex improves leather grain, wear. (105G)

. . . Quilon chrome complex (reduced chrome salt), long successful in imparting water resistance to felts and fabrics, is now used on side leather. From consumer's viewpoint, Quilon-treated leather shows tighter grain structure, better appearance and shape retention, better finish and resistance to water absorption than untreated shoes. From tanner's viewpoint, water-soluble Quilon is easy to apply and geared for normal inline production. It bonds chemically to the leather's protein, producing a permanent fixation. At present, finished product cost of Quilon is about 2¢/sq. ft. of leather. —*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

USE AN

IGEPAL® CO

IN YOUR PROCESS

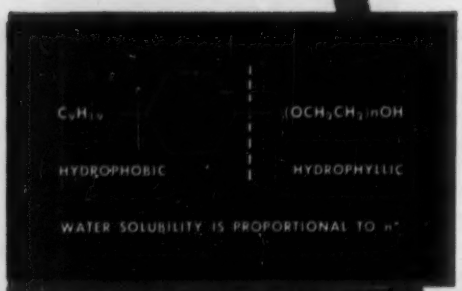
OR PRODUCT

The 8 products that comprise the Igepal CO series of non-ionic surfactants, while chemically alike, are different in ethylene oxide content, solubility and performance characteristics. They are specifically designed and performance tested for use in technical processes and consumer products requiring a stable non-ionic surfactant.

The correct hydrophobic-hydrophyllic balance of any surfactant system is essential to optimum performance. The eight products in the Igepal CO series cover the practical range of hydrophobic-hydrophyllic ratios for nonylphenol to ethylene oxide.

Furthermore, being non-ionic, the Igepals are not limited in their use because of undesired reactions with electrolytes and are stable to hydrolysis by acids and alkalis even at elevated temperatures.

To assist you in planning significant experiments in your product or process, the exact composition of the Igepal CO products are described below. Matched sets of samples are available upon request.



PRODUCT	n*	% ETHYLENE OXIDE	CLOUD POINT, 1% SOLUTION
Igepal CO-210	1½	23	Insoluble in water
Igepal CO-430	4	44	Insoluble in water
Igepal CO-530	6	54	Cloudy at 32 F.
Igepal CO-630	9-10	65	126-133 F.
Igepal CO-710	10-11	68	158-165 F.
Igepal CO-730	15	75	203-212 F.
Igepal CO-850	20	80	Clear at 212 F.
Igepal CO-880	30	86	Clear at 212 F.

*Moles of ethylene oxide per mole of nonylphenol.

IGEPAL CO

SURFACTANTS ARE USED IN PRODUCTS OR PROCESSES FOR:

AGRICULTURE
BUILDING
CHEMICAL MANUFACTURING
DETERGENT COMPOUNDING
COSMETICS
DAIRY
LEATHER
METALS
PAPER
PLASTICS
PETROLEUM
TEXTILE
RUBBER

To indicate the wide range of performance characteristics available with Igepal CO surfactants, some typical uses are shown for each product:

IGEPAL CO-210
In high concentrations, serves as defoaming agent in low foaming detergents.
In low concentrations, acts as foam stabilizer for high foaming detergents.
Co-emulsifier in non-ionic surfactant blends.
Defoaming agent in cold water cleaners.
Oil soluble detergent and dispersing agent for use in petroleum oils.

IGEPAL CO-430
Oil soluble emulsifying agent.
Intermediate in the synthesis of high foaming, water soluble sulfate esters.
Oil soluble detergent and dispersing agent for use in petroleum oils.

IGEPAL CO-530
De-inking of paper.
Emulsifier for silicones and agricultural chemicals.
Oil soluble surfactant and emulsifying agent.
Detergent and dispersing agent for use in petroleum oils.

IGEPAL CO-630
Surfactant for use in all phases of textile processing.
Fast rinsing surfactant for cleaning paper machine felts.
Rewetting agent for paper towels and tissues.
Wetting agent in hide soaking and penetrant in fat liquors.
Surfactant for household and industrial cleaning formulations.
Wetting agent for use with mineral acids and corrosion inhibitors.

IGEPAL CO-710
Can be used interchangeably with Igepal CO-630 in most applications, and is particularly effective when higher temperatures are employed.
Highly efficient textile detergent in neutral, acid and alkaline media.
Surfactant in heavy duty liquid detergent formulations and in controlled suds laundry and household formulations.

IGEPAL CO-730
Surfactant for high temperature general detergency, and dispersing.
Emulsifying agent for fats, oils and waxes.
Penetrating and wetting agent in caustic solutions.
Surfactant for use with high concentrations of electrolytes.
Wetting agent for use with mineral acids and corrosion inhibitors.

IGEPAL CO-850
Surfactant for high temperature general detergency and dispersing.
Wetting agent in high concentrations of electrolytes.
Emulsifying agent for fats, oils and waxes.
Stabilizer for synthetic latices.

IGEPAL CO-880
Detergent for high temperature scouring of textiles in pressure equipment.
Stabilizer for synthetic latices.
Surfactant for high temperature general detergency and dispersing.
Emulsifying agent for fats, oils and waxes.
Wetting agent in high concentrations of electrolytes.

MANY APPLICATIONS REQUIRE A MIXTURE OF BOTH AN OIL-SOLUBLE AND WATER-SOLUBLE NON-IONIC SURFACTANT. IN SUCH CASES WE SUGGEST THE USE OF AN IGEPAL HAVING A LOW ETHYLENE OXIDE CONTENT IN COMBINATION WITH ONE HAVING A HIGH ETHYLENE OXIDE CONTENT. THIS WILL GIVE IMPROVED EMULSION STABILITY OVER A WIDER TEMPERATURE RANGE.

For assistance on complex surfactant problems, our technical staff is always available for consultation.
Technical literature on the Igepal CO surfactants will be supplied upon request. Prompt shipments can be made from warehouse stocks maintained at branch offices.

From Research to Reality

ANTARA gaf

ANTARA CHEMICALS

A SALES DIVISION OF
GENERAL ANILINE & FILM CORPORATION
435 HUDSON STREET • NEW YORK 14, NEW YORK

SALES OFFICES: New York • Boston • Providence • Philadelphia • Charlotte • Chattanooga • Chicago
Portland, Ore. • San Francisco • Los Angeles. IN CANADA: Chemical Developments of Canada, Ltd., Montreal

Igepal CO surfactants manufactured by General Aniline & Film Corp. are sold outside the United States under the trademark "Antarox CO".

Inquiry Code Number for This Advertisement-106-7

SURFACE ACTIVE AGENTS, continued

Surfactant

For textile processing. (108A)

. . . Sandopan DTC combines advantages of both anionic soap and nonionic detergents. It saves bleaching material and gives a faster, more uniform bleach; removes oil and graphite from synthetics, increases abrasion resistance and crease retention of resin-finished goods; permits faster desizing. —*Sandoz Chemical Works, Inc., New York 13, N. Y.*

Surfactant, Anionic

Reduces processing time, increases efficiency. (108B)

. . . Isomal 265, a sulfonated ester, has lower surface tension than any other similar product and claims unmatched wetting and rewetting properties. 265 is easily dispersed in a variety of solvents (e.g., alcohol, acetone, petroleum solvents, oils, etc.), is compatible with nonionic and other anionic agents. Biggest uses for this 65% active anionic are anticipated in processing of industrial and agricultural chemicals—an an emulsifier for fats, waxes, etc.—*Chemical Div., Johnson-March Corp., Philadelphia, Pa.*

Surfactant, Cationic

For instant dispersion of pentachlorophenol in water. (108C)

. . . 1 to 5% Emulsifier 1990-A is used for instant dispersion of emulsifiable concentrates containing up to 15% pentachlorophenol. Preparation of the concentrate is simple—involves heating mixture of pentachlorophenol and solvent to form solution to which emulsifier is added. End user adds concentrate to water when he's ready to apply the chemical.—*Market Development Dept., Chemical Div., Armour and Co., Chicago 9, Ill.*

Surfactants

Have high thermal stability. (108D)

. . . Series of perhalogenated, monobasic carboxyl acids (Kel-F Acids) derived from chlorotrifluoroethylene are characterized by high thermal stability, up to 450 F.; resistance to strong acids and oxidants; selective reactivity of a carboxylic acid; surface activity in highly acidic, basic or oxidizing media; low vapor pressure; high density Kel-F Acids. Potential uses include: promotors for 2-phase reactions, additives for metal treating baths, rubber accelerators.—*M. W. Kellogg Co., Jersey City, N. J.*

• Textile Chemicals and Synthetic Fibers

Additive, Bleaching

Inhibits corrosion, odor formation. (108E)

. . . X-Tan-Assist, a bleaching additive, inhibits corrosion and odor formation caused by sodium chlorite. It also increases the latter's bleaching effectiveness by as much as 50%, reduces consumption by 33%. Additive does all this by slowing chlorine dioxide formation to the rate at which it's consumed in bleaching. — *Tanatex Corp., Kearny, N. J.*

Fabric, Polyester

Nonwoven, felted fabric. (108F)

. . . Nonwoven and felted Scotch brand polyester web offers increased moisture resistance, superior varnish pickup ability and greater conformability than conventional cotton, glass or synthetic cloths. It's making a bid for use by makers of varnish or resin impregnated coils, electrical motor repair shops.—*Minnesota Mining and Mfg. Co., St. Paul 6, Minn.*

About New Chemicals & Materials . . .

This inventory of new chemicals and materials lists only new or newsworthy products selected by CE editors for publication in August 1955-July 1956 issues. The 209 items in this inventory have, therefore, been carefully screened for their interest to chemical engineers in industry; for this reason, this section lists very few research chemicals, specialty chemicals, analytical reagents or consumer products. Most products—except organic chemicals—are listed by their major end uses. To get more information, see p. 108. Also see literature listing that starts on p. 120.

DU PONT

Better Things for Better Living ...through Chemistry

CHEMICAL ENGINEERING NEWS

PROPERTY AND APPLICATION DATA ON THESE VERSATILE ENGINEERING MATERIALS: "ZYTEL," "ALATHON," "TEFLON," "LUCITE."

Chemically inert TEFLON® simplifies design in new mechanical seal

...offers economical service on pumps handling corrosives

TEFLON® can now be cemented with conventional adhesives

A new process provides a cementable surface on shapes fabricated from "Teflon" tetrafluoroethylene resin. Chemically inert, "Teflon" normally refuses to stick to anything. After treatment, however, "Teflon" may be bonded with conventional adhesives to a wide range of other materials as well as to itself.

Fittings of ZYTEL® provide leak-proof connections on tubing

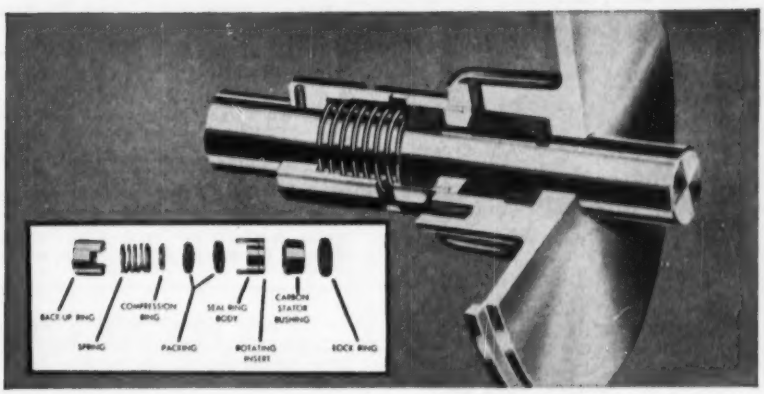


Compression-type "Jaco" fittings of molded "Zytel" nylon resin simplify installation and disassembly. In this new design, the ferrule necessary for a leak-proof seal is molded as an integral part of the nut. The resiliency of "Zytel" enabled this fitting to withstand a test of more than 25,000,000 oscillations. "Zytel" forms a non-corrosive connection, impervious to most acids and alkalies, and capable of withstanding pressures to 500 p.s.i. Its service temperature ranges from −70° to 295° F. Fittings are molded by Jaco Manufacturing Company, Cleveland, Ohio.

This versatile Du Pont engineering material is a time and cost saver in many applications where lightness in weight, heat resistance, corrosion resistance and strength in thin sections are essential. Investigate this product further by mailing the coupon below.

NEED MORE INFORMATION?

Clip the coupon for additional data on the properties and applications of these Du Pont engineering materials.



Exploded and cross-sectional view of new mechanical seal, with parts of "Teflon" shown in red. Seal can be rapidly interchanged with packing.

Latest design in mechanical seals features complete and rapid interchangeability with packing. Developed by Chemical Power and Products, Inc., New York City, this new seal can be made to fit any stuffing box, requiring no alterations or special clamps. It offers economy by eliminating product loss and minimizing installation and downtime.

"Teflon" tetrafluoroethylene resin plays the feature role in the sealing of corrosive liquids and slurries. It is used as a shaft packing in the form of a male and female cup, and providing maximum flexibility with minimum spring pressure as a wedge lock in the bottom of the seal to prevent leakage and stop rotation of the stator. The self-aligning wedge lock of "Teflon" slips easily in place, and the time and expense involved in installing a clamp to hold the stator are eliminated.

"Teflon" is selected in sealing applications because of its superior physical and chemical properties. "Teflon" is chemically inert—alkali metals and fluorine, under unusual conditions, are the only ordinary industrial chemicals which will attack it. This unique engineering material will operate at service temperatures ranging from −450° to 500° F. "Teflon" is non-flammable, and has zero water absorption by ASTM test. It has low-temperature toughness and an exceedingly low coefficient of friction.

For handling corrosive chemicals, "Teflon" offers unexcelled service for such items as pump impellers, expansion-joint bellows, filters, tubings, and gaskets and packings. If you have a problem involving extreme heat and corrosion, investigate the use of "Teflon." For property data that will help you analyze your problems in terms of this unique material, clip and mail the coupon below.

E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department
Room 259, Du Pont Building, Wilmington 98, Delaware
In Canada: Du Pont Company of Canada Limited, P.O. Box 660, Montreal, Quebec

Please send me complete property and application data on Du Pont "Teflon" ☐ and "Zytel" ☐.

I am interested in evaluating these materials for

_____

_____

Name_____

Firm Name_____

Position_____

Type of Business_____

Street Address_____

City_____ State_____

TEXTILE CHEMICALS & SYNTHETIC FIBERS, continued

Fiber, Rubber-Sized

More compressible, more resilient. (110A)

. . . Precipitating a Hycar-type synthetic rubber directly on paper fibers (other rubbers can only be coated on paper's surface) produces a vulcanized fiber well suited for abrasion-resistant uses. Type RS-10H rubber-sized fiber's friction coefficient is 30-50% higher than that of standard vulcanized fiber. In gasketing, RS-10H is 70% more compressible, 69% more resilient (although both tensile and compressive strengths are lower); both its rubber and fiber components are practically unaffected by oil; its resistance to various corrosive chemicals shows very definite improvement. —*National Vulcanized Fibre Co., Wilmington, Del.*

Fibers, Acrylic

Cost of staple and tow fibers cut 17-20%. (110B)

. . . Three big acrylic fiber manufacturers (Chemstrand, Union Carbide and Carbon, Du Pont) have cut the price of their respective products—Acrilan, Dynel, Orlon. Acrilan's price is down 20%; Dynel's, 18%; Orlon's, 17%. Du Pont has also cut the cost of nylon (16-20%) and Dacron (13-20%) and has introduced a new Orlon staple, type 39, aimed at wool's markets.—*Chemstrand Corp., Decatur, Ala.; Union Carbide and Carbon Corp., New York 17, N. Y.; E. I. du Pont de Nemours & Co., Wilmington 98, Del.*

Filament, Acetate

Fire retardant. (110C)

. . . Fire-retardant acetate filament yarn in both natural and solution-dyed colors is available for a wide variety of uses. Promising applications, where fire resistance is important, are expected to include transportation and decorative fabrics.—*Celanese Corp. of America, New York 16, N. Y.*

Preservative

Copper formate protects textiles, wood too. (110D)

. . . Copper formate solution can be applied to textiles and wood for long-time preservation. In textile treatment, formate has edge over copper naphthenate because it: Leaves fabrics odorless, imparts soft hand, doesn't cause skin irritation, doesn't affect washing or dyeing qualities of fabrics, eliminates fabric impregnation via expensive, hazardous organic solvents. In wood treatment, formate solution has edge over creosote because it's odorless, non-toxic, non-irritating, leaves wood clean and oil-free, is non-leachable. New fungicide will be made available to both textile and wood industries at costs competitive with preservatives already on the market. And long-range plans call for copper formate to invade still other fields. Next on the list: paper—for protection against mildew and rot by destroying cellulosic bacteria. —*National Cylinder Gas Co., Chicago 11, Ill.*

Retardant, Soil

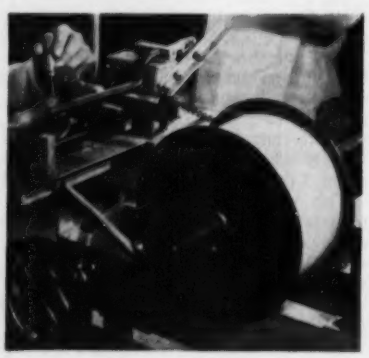
Protects carpets. (110E)

. . . Non-silica carpet treating compound, Cyana Soil Retardant, slows soiling of rugs by filling in roughness of fibers with finely divided materials. It keeps surfaces clean up to five times longer than when untreated.—*American Cyanamid Co., New York 20, N. Y.*

Rope, Mylar

Tough and dimensionally stable. (110F)

. . . Mylar rope has greater dimensional stability than either nylon or Dacron, can take more abuse. It has far less stretch than the other plastics. Under tension, ¼-in. Mylar line breaks at 1,400 lb., compared with filament nylon (toughest rope before Mylar) at 1,200 lb., Dacron at 1,080 lb. and manila at 600 lb. Mylar rope holds up longer than nylon under abrasion. New rope is available in diameters of ¼ to 1 in., in standard 3- and 4-strand types, as well as laid cable. Cost: 25¢/ft. for ¼-in. line, $1/ft. for ½-in. line.—*U. S. Plastic Rope Co., Redwood City, Calif.*



Sheet, Reinforced Teflon

Has high resistance to distortion. (110G)

. . . Fiber-reinforced Teflon sheet material, Duroid 5600, offers greater resistance to distortion in cold flow and extrusion. MD stiffness is 140,000 psi.; deformation under load, 2% at 1,200 psi., 3% at 2,000 psi.; heat distortion temperature, 500 F. plus—*Rogers Corp., Rogers, Conn.*

Yarn, Acetate

High strength with low stretch. (111A)

. . . Fortisan-36 offers many benefits to industries using fire hose or belt-driven machines. Highly saponified acetate yarn has strength (better than 8 g. per denier), low stretch and dimensional stability. Power belting—High strength permits smaller belts and smaller pulleys; therefore, lower over-all costs for machinery designers. Dimensional stability insures constant speed for V-belt driven machinery necessary to uniform production quality. Firehose—High strength-to-weight ratio gives hose—containing Fortisan-36 in filling—light weight, flexibility. Conveyor belting—Expansion of uses in which fabric-reinforced belts can be used, e.g., replacement of some conveyor belts which are currently being reinforced with steel.—*Celanese Corp. of America, New York 16, N. Y.*

Yarns, Aluminum

For auto tires? (111B)

. . . Aluminum yarn may soon be in auto and truck tires. Already used in dresses, auto upholstery, it can disperse heat from high speed operation that strains materials in tires.—*Reynolds Metals Co., Louisville, Ky.*

Yarns, Heavy-Duty

Based on polycaprolactam. (111C)

. . . Heavy-duty Caprolan yarns, based on polycaprolactam, are specifically geared for industrial applications and mechanical goods where toughness and impact strength are essential. Caprolan yarns have minimum average standard tenacity of 6.5 g. per denier, will retain 90% of their strength in the wet state and will eventually be available in range of 2,000 to 50,000 total denier.—*National Aniline Div., New York 16, N. Y.*

• Miscellaneous Chemical Products

Absorber, Ultraviolet Light

Antistatic compound, too. (111D)

. . . Stabilite is an absorber for ultraviolet light and an antistatic compound for plastics. A 0.001-in. film on plastic surfaces filters out 99.8% of incident ultraviolet light at wave length 400 and 100% at all wave lengths below 390.—*Merix Chemical Co., Chicago 15, Ill.*

Additives, Plating

Key to new nickel plating process. (111E)

. . . Addition agents—combinations of sulfonates and unsaturated alcohols—are credited with success of high-speed, bright nickel plating process which plates nickel twice as fast as other processes. Additives make possible the use of activated carbon pack in the filter for the plating solution. Results: Continuous removal of harmful organic contaminants, eliminating costly and time-consuming batch purification. Process, called Levelume, combines the qualities of full brightness, high leveling and exceptional speed.—*Hanson-Van Winkle-Munning Co., Matawan, N. J.*

Alumina, Calcined

Higher quality at regular prices. (111F)

. . . R-2003 calcined alumina—with fewer impurities and less water—is available to industry at regular commercial prices. Produced by a combination Bayer-Sinter process, alumina contains minimum of impurities like iron, silicon, titanium oxides. R-2003 is highly resistant to thermal and mechanical shock, transmits these properties to finished product containing it. Applications range from abrasives production to use in refractories for tank linings.—*Reynolds Metals Co., Louisville, Ky.*

Aluminas

Markets on the upgrade. (111G)

. . . Versatility of aluminas and their increased industrial use are based on their high strength, resistance to mechanical shock, extreme hardness, high purity, stability to heat and thermal shock, chemical inertness, high or low density, dielectric strength, affinity for water. Various forms of alumina—e.g. $Al_2O_3 \cdot 3H_2O$, $Al_2O_3 \cdot H_2O$, Al_2O_3-calcined, Al_2O_3-tabular — are used in refractories, ceramics, abrasives, pigments, fillers, desiccants, catalysts, insulators.—*Aluminum Co. of America, Pittsburgh, Pa.*

Aluminum, Gold-Colored

Sunfast, non-fading. (111H)

. . . Sunfast and non-fading gold-colored aluminum is made by anodizing under readily controlled conditions. Process provides color source in metal itself, eliminating uncertainties arising from use of dyes or other coloring agents in anodic coating. Variety of shades and finishes is available.—*Kaiser Aluminum & Chemical Corp., Oakland, Calif.*

Westvaco® CHEMICALS

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ALKALIS†
CAUSTIC POTASH—45% and 50% Liquid; Flake; Solid.
CAUSTIC SODA
Liquid 73%; Liquid 50%, Regular, Rayon and Low-Chloride Grades.
Flake, Solid and Ground (76% Na_2O).
REFINED SODA ASH†—Light (one grade); Dense (two grades).
NATURAL SODA ASH†—Light and Dense.
NATURAL SODIUM SESQUICARBONATE (SULTRON®)

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CARBON TETRACHLORIDE—Technical and C.P. Grades.
ETHYLENE DIBROMIDE
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OTHER CHEMICALS
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BROMINE—Liquid
CHLORAL†—Technical
CHLORINE—Liquid
DICHLOROACETALDEHYDE
unsym-DIMETHYLHYDRAZINE
FIRE EXTINGUISHER FLUID (Carbon Tetrachloride Base).
GRAIN AND SPOT FUMIGANTS†
Composition shown by volume.
No. 3—80% Carbon Tetrachloride, 20% Carbon Bisulfide.
(Also available with flammability depressant).
No. 6—(Spot Fumigant No. 6)—60% Carbon Tetrachoride,
25% Ethylene Dichloride, 15% Ethylene Dibromide.
No. 8—65% Carbon Tetrachloride, 30% Ethylene Dichloride,
5% Ethylene Dibromide.
No. 9—80% Carbon Tetrachloride, 15% Carbon Bisulfide,
5% Ethylene Dibromide.
(Custom mixed Grain Fumigants and Solvent Formulations available on request).
HYDROBROMIC ACID, 48%
HYDROGEN BROMIDE—Anhydrous
KAM® (MODIFIED CAUSTIC SODA)—Solid and Flake.
Phosphated Caustic Soda; bottle washing compound.
"MAGNESOL"* BRAND MAGNESIUM SILICATE†
A strongly adsorptive synthetic active magnesium silicate, in the form of a fluffy white free-flowing powder — with unique properties of selective adsorption.
INDUSTRIAL GRADE—Regular and Powdered.
Valuable for purification of many solvents, organic chemicals, oils, fats and waxes by adsorption of troublesome impurities including those causing colors, odors and flavors; also as an anti-caking agent for powdered materials and dry mixtures; a curing agent for synthetic resins; a carrier for various additives and catalysts; in the preparation of antibiotics and vitamins, and other applications.
DRY CLEANING GRADE
Valuable as a combination adsorbent and filter aid for preventing buildup of undesirable impurities in dry cleaning solvent.
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ETHYLENE CHLOROBROMIDE
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meta-PHENYLENE DIISOCYANATE
TOLYLENE DIISOCYANATE
†Additional Literature Available on Request.
*Magnesol is the registered trade mark of Food Machinery and Chemical Corporation for its brand of magnesium silicate adsorptive powder, made by patented processes.

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Powder or Granules. Food and Commercial Grades.
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HEXAPHOS® AND FOSFODRIL®*†
Adjusted and unadjusted grades, five physical forms.
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Powder or Granules.
TETRAPOTASSIUM PYROPHOSPHATE (TKPP), ANHYDROUS†
Powder or Granules.
TETRASODIUM PYROPHOSPHATE (TSPP), ANHYDROUS
Powder, Granules or Crystals.
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Powder or Granules.
TRISODIUM PHOSPHATE (TSP), MONOHYDRATE—Granular.
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Baking Powders and Creams based on Sodium Acid Pyrophosphate.

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MAGNESIAS†
SEA SORB® 43†—Technical Grade Adsorbent, Powder.
SEA SORB® 83†—Technical Grade Adsorbent, Granular.
CATALYST 1707†, Magnesia base catalyst.
CHEMICAL GRADES:
2661 (Powder, Granules); 2663 (Powder); 2665 (Powder).
DEVELOPMENTAL GRADES†
P-96, Refractory; Catalyst Carriers; Heat Exchange Pebbles.
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RUBBER GRADE—HEAVY (325-mesh)
INSULATION GRADE
RAYON GRADE
OXYCHLORIDE CEMENT GRADE—2664; 2667.
REFRACTORY GRADE—PERICLASE—Three Regular Grades.
PERICLASE SAND
A loose heat-conductive filler for industrial electrical heaters.
MAGNESIUM CHLORIDE*
MAGNESITE—Crude Magnesium Carbonate

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BARIUM CARBONATE*—Powder.
BARIUM OCTAHYDRATE
Crystal—Technical and Official Grades; Flake—Technical Grade.
BARIUM NITRATE—Crystals.
BARIUM OXIDE, TECHNICAL—Powder.
BARIUM PEROXIDE—Powder.
BARYTES, GROUND*—Powder.
BLACK ASH (Barium Sulfide)*—Powder.
BLANC FIXE (Barium Sulfate)*—Powder.

OTHER CHEMICALS
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GYPSUM—Cement, Agricultural and Chemical Grades.
METHYL BROMIDE*
PHOSPHOROUS OXYCHLORIDE†
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SOIL FUMIGANTS
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Westvaco Mineral Products Division is conducting an active research program in the field of organic phosphorus compounds generally. We invite inquiries from and are anxious to co-operate with those interested in the use of organic phosphorus compounds.
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For Inquiry Code Numbers, See Master Index on Page 361

MISCELLANEOUS CHEMICAL PRODUCTS, continued

Aluminum Pig

Super pure. (113A)

. . . Super-pure aluminum pig—with 99.99% or more aluminum—is available in volume from a domestic source. Important applications include: Catalysts for chemical, petroleum industries; capacitors for electronic, radio TV equipment.—*Kaiser Aluminum & Chemical Corp., Oakland 12, Calif.*

Anesthetic, Intravenous

Derived from steroid-based raw materials. (113B)

. . . Viadril (hydroxydione sodium) is synthesized from steroid-containing raw materials similar to those forming basis for hydrocortisone manufacture, but has no endocrine activity. It works best combined with nitrous oxide. Viadril prevents pain sensitivity; produces muscle relaxation, sleep without unduly depressing respiration or circulation. Recovery is rapid; side effects, few.—*Chas Pfizer & Co., Inc., Brooklyn 6, N. Y.*

Antihistamine

Has few side affects. (113C)

. . . Diafen (diphenylpyraline hydrochloride) is an antihistamine which is said to have few side effects. Size of an effective dose is the smallest now on the market—each 2 mg. tablet is the size of a ¼-grain saccharine tablet. —*Schenley Laboratories, Inc., New York, N. Y.*

Argon

Production continuing to soar. (113D)

. . . Sparked by postwar industries, argon production has soared 300% in last five years. Prime markets include: cutting and shaping of non-ferrous metals (by using high-speed, gas-shielded, constricted arc); electric arc welding of steel, stainless steel, aluminum, magnesium; production of bulbs, electronic tubes.—*Linde Air Products Co., New York, N. Y.*

Boron

Has new price schedule. (113E)

. . . Elemental boron in quantity lots is being offered under a reduced price schedule: lots of 1-4 lb., $25/lb.; 5-24 lb., $20/lb.; 25-99 lb., $15/lb.; 100 lb. and over, $13/lb. All prices are f.o.b. Vernon, Los Angeles or Trona, Calif. —*American Potash & Chemical Corp., Trona, Calif.*

Carbides, Man-Made

For milling, cutting. (113F)

. . . Two man-made carbides have been developed—for milling high-strength cast iron and for precision cutting steel. Grade 860, for milling, lasts 20-30% longer in machining high-strength cast irons. Grade 330 has transverse rupture strength of 200,000 psi., almost 2x as tough as commonly used carbides.—*Carboloy Dept., General Electric Co., Detroit 32, Mich.*

Catalyst, Clay

Cheaper, performs better than synthetics. (113G)

. . . Kaolin clay, an alumina compound, gives good yields of high octane gasoline in moving bed (Houdriflow) refining processes. A purified, pelleted clay, it's expected to sell for a good deal less than $300-a-ton synthetics like silica gel impregnated with an alumina compound. Another type of kaolin catalyst is being tested in fluid catalytic cracking. — *Minerals and Chemicals Corp. of America, Metuchen, N. J.*

Coagulant Aid

Simplifies water clarification. (113H)

. . . Coagulant aid, mixture of polyelectrolyte and bentonite clay, saves time and money for Jones & Laughlin Steel Corp. at its Aliquippa, Pa., plant. Addition to tin department's water clarification and demineralization system makes sludge blanket more stable, less sensitive to flow rates; produces tough, rapid settling floc. It also saves an estimated 30% in amount of alum coagulant used.—*Hagan Corp., Pittsburgh, Pa.*

Coagulant Aids

Help remove water turbidity. (113I)

. . . Coagulant aids improve efficiency of coagulants in removing turbidity from water. Aids cause flocs of aluminum or iron hydroxide to form more quickly, settle more rapidly. They also allow for clarification of raw water over a broader pH range than would otherwise be possible. Choice of three compositions—No. 7, 11, 18—depends on water quality and type of clarifier or softener.—*Hagan Corp., Pittsburgh, Pa.*

Cobalt-60

Gamma-ray sources used for inspection. (113J)

. . . Cobalt-60 gamma-ray sources are used in industrial plants for nondestructive inspection of material for flaws. Sources are enclosed in a case, sealed against leakage and individually calibrated to within ±10% of stated value.—*Nuclear Instrument and Chemical Corp., Chicago 10, Ill.*

MISCELLANEOUS CHEMICAL PRODUCTS, continued

Corrosion-Free Surface

With chromic acid. (114A)

. . . Good resistance to corrosion and paint flaking can be secured by rinsing metal surfaces which have previously been phosphated with concentrated solutions of chromic and chromic-phosphoric acids.—*Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C.*

Diamonds, Man-Made

One step nearer commercial production. (114B)

. . . Now that man-made industrial diamonds are being produced in limited quantities, General Electric is one step closer to its two-fold goal of making these diamonds commercially available at a marketable price. Supply of industrial diamonds is essential to U. S. industry for finishing interchangeable parts which must be held to close tolerances and for shaping and dressing grinding wheels that produce these tolerances. Domestic source would help make U. S. independent of the natural source, South Africa.—*Carboloy Dept., General Electric Co., Detroit 32, Mich.*

Fire Extinguisher

No CO or phosgene formation during firefighting. (114C)

. . . "Azeotropic chloromethanes" are found in fire extinguishing formula called CM-7, product of Beall Research and Engineering Corp., Washington, D. C. Neither phosgene nor carbon monoxide can form when CM-7 is applied to a fire. Also, CM-7 produces 10-20% more vapor than CCl_4; penetrates burning embers of wood, textiles and other Class A fires more deeply than other vaporizing liquids. —*Red Comet, Inc., Littleton, Colo.*

Flocculant

Improves sedimentation, filtration in disposal operations. (114D)

. . . Good-rite K-720 synthetic resin collects small liquid-dispersed particles into larger clusters to improve degree and rate of sedimentation. On filtration, flocculation with K-720 forms more porous filter cake with resultant reduced pressure drop and increased throughput. As little as 0.01 lb. of K-720 per ton of dispersed solids normally is sufficient. It's aimed at solving pollution and recovery problems in paper, textile, mining industries as well as in sewage disposal. 20% water solution is available as Good-rite K-702S.—*B. F. Goodrich Chemical Co., Cleveland, Ohio.*

Fluorochemicals

Reduce acid mist from chromium plating baths. (114E)

. . . Zero-Mist pellets, incorporating Minnesota Mining and Manufacturing's fluorochemicals, aren't affected by oxiding conditions in a chrome bath; therefore they can reduce acid mist and spray from chromium plating baths. They form a yellow foam blanket on the surface of the bath. Chromic acid waste is cut as much as 70%.—*Udylite Corp., Detroit, Mich.*

Gallium

Used as sealant for lab equipment. (114F)

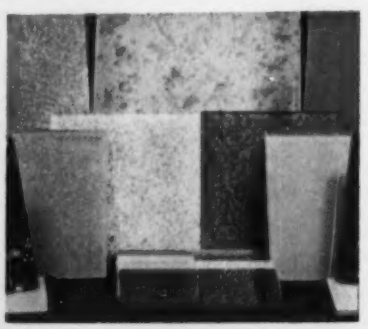
. . . New market for long available, but seldom used, gallium is as sealant in glass joints and valves in vacuum equipment. Unlike widely used silicone grease sealants, gallium doesn't evaporate at high vacuums and isn't dissolved by cleaning solution. Its low melting point simplifies equipment dismantling.—*Aluminum Co. of America, Pittsburgh, Pa.*



Glass, Heat-Strengthened

Used in building panels. (114G)

. . . Spandrelite heat-strengthened glass panels, made by fusing ceramic color to plate glass base, have greater shock resistance than ordinary plate glass of same thickness and have already proved tough enough to warrant their use in cladding industrial buildings. Color side is mounted down, providing additional weather protection of ¼ in. or more of glass—glass which is non-porous, self-cleaning, non-absorbent, stain and odor proof and which affords a wide choice of jewel-like visual effects.—*Pittsburgh Plate Glass Co., Pittsburgh 22, Pa.*



Did you ever think of using LITHIUM *as:*

AN ANTI-FREEZE OR DE-ICING COMPOUND— Lithium chloride solutions freeze as low as -67° F. and are used for this reason in dry cells, fire extinguishers and as de-icers.

A CATALYST— Synthetic rubber made from isoprene by using lithium as catalyst is remarkably similar to natural rubber in structure. The low cost of its use suggests it should be tried in other areas.

AN AIR CONDITIONER AND REFRIGERANT— Lithium chloride is extremely hygroscopic, highly soluble at low temperature, and has good thermal stability. In contact with air will maintain relative humidities from 10% up, over a wide temperature range. Such solutions may be used as heat transfer media to heat or cool and dry conditioned air. Lithium bromide is used as an absorbent in sealed industrial cooling units.

A ROCKET PROPELLANT— Lithium hydride is a most convenient raw material for production of other "active" hydrogen-containing possible fuels, since it gives smooth reactions with high yields. In solid propellants, lithium compounds provide the highest percentage of active ingredients.

A CORROSION INHIBITOR— Lithium dichromate offers good corrosion inhibition in cooling systems. Its solubility in organic fluids should extend the usefulness of many organics.

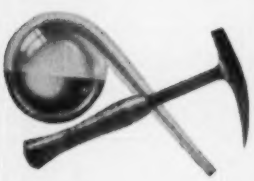
A DEGASIFIER— Lithium metal (as low as 50 ppm) is used to remove gases from copper and increase electrical conductivity.

A FLUX— Lithium fluoride, chloride, etc. with other salts produce compositions with low, favorable surface tension characteristics and excellent fluxing and deoxidizing properties, useful in production and fabrication of such metals as aluminum, magnesium and titanium.

AN ELECTROLYTE ADDITIVE— Lithium salts cause a pronounced increase in electrical conductivity, and lower melting temperatures when used in both aqueous and fused salt baths.

FOOTE CAN HELP PUT LITHIUM TO WORK IN YOUR PROCESS REQUIREMENTS

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PLANTS: Exton, Pa.; Kings Mountain, N.C., Knoxville, Tenn.; Sunbright, Va.

FOOTE MINERAL COMPANY
457 Eighteen W. Chelten Bldg., Phila. 44, Pa.
I am interested in lithium for:

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Name _____

Company _____

Address _____

Inquiry Code Number for This Advertisement-115

MISCELLANEOUS CHEMICAL PRODUCTS, continued

Heating Medium

Fire resistant, noncorrosive, used at low pressures. (116A)

. . . Arcolor 1248 (chlorinated biphenyl), is a heat transfer medium which is fire resistant, operates at low pressures, has good heat transfer properties, is stable indefinitely at temperatures to 600 F., noncorrosive to metals. It can be used in forced circulation heating to 600 F.; reduces fire hazards; doesn't require costly high-pressure equipment; provides efficient, uniform heating.—*Monsanto Chemical Co., St. Louis 4, Mo.*

H_2O_2 Solutions

Concentrated. (116B)

. . . Hydrogen peroxide solutions in very high concentrations—90% to almost 100% H_2O_2—have been made commercially available.—*Becco Chemical Div., Food Machinery and Chemical Corp., Buffalo, N. Y.*

Inosine

Cellular metabolite. (116C)

. . . Inosine, a cellular metabolite important in growth studies, is now available in chromatographically pure grade. Its cost is $6 for a 5-gram bottle.—*Schwarz Laboratories, Inc., Mount Vernon, N. Y.*

Insulation, Al_2O_3

0.0002-in. film provides enough insulation for aluminum coils. (116D)

. . . Winding coils with aluminum foil or sheet insulated only by an anodized layer of aluminum oxide is feasible now. And this could presage extensive replacement of copper in transformers, solenoids or electric magnets. For example, 100 million lb./yr. of aluminum can replace 200 million lb./yr. of copper in transformers.—*Reynolds Metals Co., Louisville, Ky.*

Lignite Char

Possible chemical raw material. (116E)

. . . Raw material for chemicals—that's how Alcoa looks on tar derived from lignite carbonization to produce electric power for its plants. Research program has uncovered valuable chemical compounds in the tar and is working on their recovery.—*Aluminum Co. of America, Pittsburgh, Pa.*

Mica, Synthetic

Key to high-temperature insulation. (116F)

. . . Synthetic mica, pulverized and bonded with high-grade electrical glass, is given credit for high temperature resistance of new electrical insulation, Supramic ceramoplastic. Material withstands 1,000 F. compared with 700 F. for similar compounds made with natural mica. It also provides total and permanent dimensional stability, low electrical loss, excellent arc resistance. Anticipated uses: Electronic components in high-speed aircraft and missiles where extreme temperatures are encountered; nuclear work because it resists radiation effects and high temperatures.—*Mycalex Corp. of America, Clifton, N. J.*



Oils, Organo-Silicone

Have unusual lubricating, solubility properties. (116G)

. . . Six organo-silicone oils have lubrication and anti-wear properties rivaling those of petroleum oils, can be used as emulsion breakers for oil products or as emulsifying agents. Oils—X-520, X-521, X-525, X-526 and X-527—have excellent release properties, special thermal and viscosity stability, water repellency. Anticipated uses: Rubber, plastics, lubes, etc.—*Silicones Div., Union Carbide and Carbon Corp., New York, N. Y.*

Oxides, Rare Earth

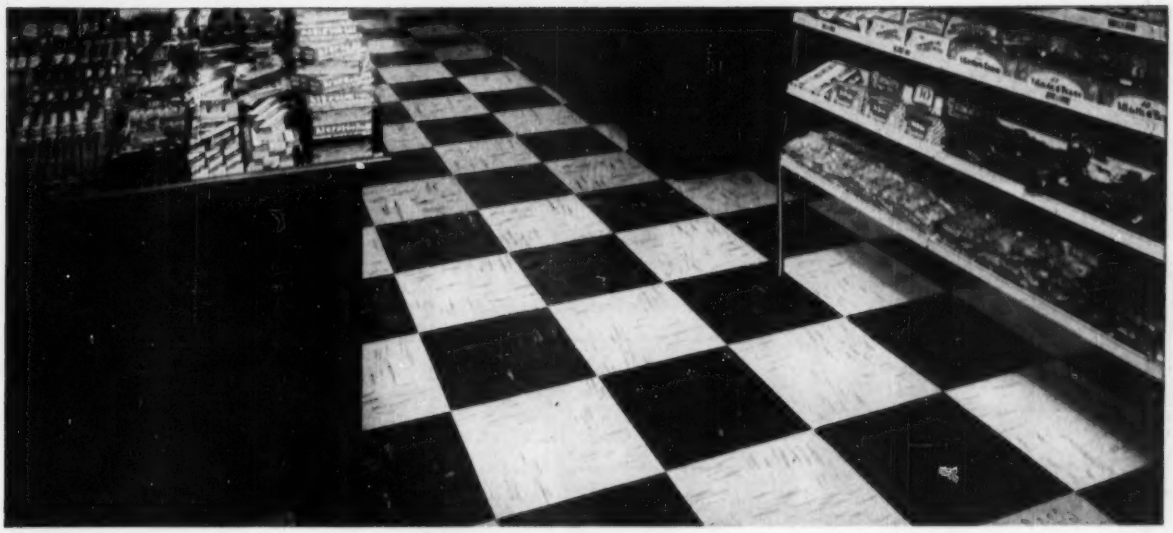
High purity. (116H)

. . . Fifteen rare earth oxides are available in extremely high purities, ranging from 99 to 99.98%. Lower purity oxides are available on demand. —*Research Laboratories of Colorado, Inc., Newtown, Ohio.*

Penicillins

Acid-stable. (116I)

. . . Acid-stable penicillins, V-Cillin (Lilly) and Penicillin V (Wyeth), give higher blood levels by oral dosage than does penicillin G. Both products are an acid form of phenoxymethyl penicillin which, because it's highly stable in stomach acids, is more available for absorption by the blood stream.—*Eli Lilly and Co., Indianapolis 6, Ind.*



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Reagent, Chromatographic

For metallic ions. (118A)

. . . Acid Rubeanic AR (dithiooxamide) is a colorimetric and chromatographic complexing reagent which reacts with a number of metallic ions to form colored, insoluble rubeanates. It's particularly sensitive in copper determinations.—*Mallinckrodt Chemical Works, St. Louis 7, Mo.*

Refrigerant Sealant

Stands up to Freon, etc. (118B)

. . . Compound 1242, when used for seals and mechanical parts, limits swelling and volume change. It stands up to Freon 12, 13, 22, 31. 32, 114, 115, 218; to C-316 and C-318; to propane, butane, pentane, methyl chloride and methylene chloride.—*Goshen Rubber Co., Goshen, Ind.*

Rosin, Stabilized

In pellet form. (118C)

. . . Stabilized rosin in free-flowing, pelleted form is an improvement over older rosin shipped as a solidified mass which must be chopped for use. Galex Pellets won't fuse at 130 F., won't cake under pressure, resist oxidation. —*National Rosin Oil Products, Inc., New York 20, N. Y.*

Selenium

First commercial-grade deposits discovered. (118D)

. . . Deposits found in Wyoming—assaying as high as 0.58% selenium—will see to it that the U. S. need not rely solely on anode mud or slime produced in blister copper refining for its selenium metal. Selenium is used today in small rectifiers, as a decolorizer for glass, as an additive improving machinability of stainless steel, and controlling quality of castings. Chemical uses, however—e.g., as pigments and rubber accelerators—consume more of our selenium supply than both glass and steel combined.—*Shawano Development Corp., New York 22, N. Y.*

Sequestrant

Non-hygroscopic. (118E)

. . . Non-hygroscopic sequestrant, Perma Kleer 80 Crystals, eliminates undesirable features of conventional drum or spray-dried products, e.g., caking during storage, picking up moisture on exposure to humid atmospheres. Crystals form stable chelates with all divalent and most trivalent metal ions.—*Refined Products Corp., Lyndhurst, N. J.*

Silicone Finish

For glass cloth used in structural laminates. (118F)

. . . Solution of silicone in methyl cellosolve, Dow Corning T-31, is effective with epoxy, phenolic, polyester and silicone resins. It can be diluted in 60 to 80 parts of water for application in conventional finishing equipment, requires no washing, neutralizing or curing; just dip and dry. T-31 is stable as supplied or diluted, needs no buffering before application. Its price of $6/lb. is estimated to add 5¢/yd. to material cost of finished glass cloth.—*Dow Corning Corp., Midland, Mich.*

Sulfurs, Surface-Conditioned

Free-flowing. (118G)

. . . Surface-conditioned sulfurs with superior free-flowing and blending characteristics are offered commercially in standard grades. They reduce dusting and attendant hazards from static-induced fires during rubber compounding and are recommended for compounding polymers that are not only difficult to reduce in size but also difficult to disperse.—*Stauffer Chemical Co., New York 17, N. Y.*

Titanium Powder

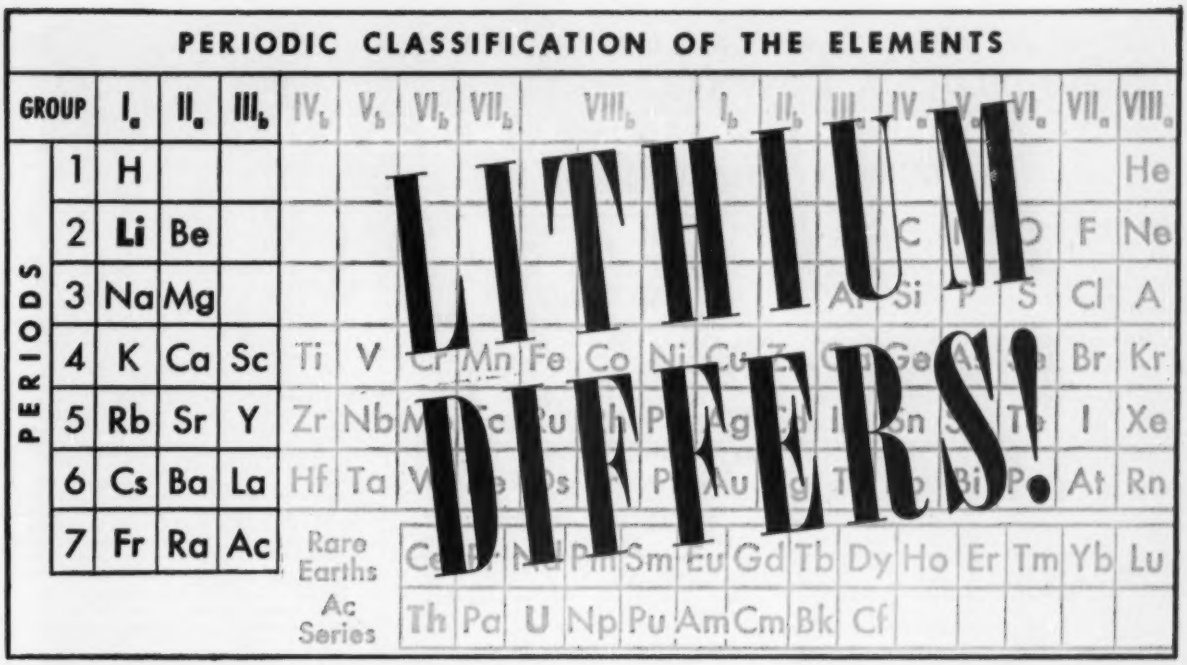
Better product via chemical-electrolytic technique. (118H)

. . . Unifide, a titanium powder of consistent quality and non-pyrophoric under normal handling conditions, is produced by a new chemical-electrolytic process. Included among powder's biggest uses are: Powder metallurgy —titanium parts; formation of titanium salts; reducing agent; catalyst; protective coatings. Powder is available in wide range of mesh sizes.—*United International Research, Inc., New York, N. Y.*

Zinc Dust

Superfine, for paints. (118I)

. . . Superfine zinc dust with an average particle size of 2-2½ microns and 95-97% metallic zinc content makes for good surface characteristics in zinc-rich paints. Among applications of this zinc dust: smooth surface primers, primers with improved suspension properties, high viscosity paints, paints with low weight per square foot. Gloss paints containing up to 50% Superfine Zinc Dust can also be produced by paint manufacturers.—*Pigment & Chemical Co., Ltd., Montreal, P. Q.*



Lithium, by reason of its atomic configuration and general characteristics, is rightfully included as the first member of Group I in the Periodic Table. A detailed study of the properties and reactions of both the elements and their compounds, however, shows that Lithium often resembles the metals of Groups II and III more closely than Group I. Following are some characteristic differences:

Lithium differs in organic chemistry . . .
because its organolithium compounds form a unique class with stability, solubility and activity characteristics intermediate between those of the Group I and Group II organometallic compounds.

Lithium also differs from the other alkali metals in that it serves as a unique catalyst for the polymerization of diolefins to materials of definite and predictable structure. It directs, for example, the polymerization of isoprene predominantly to 1,4 addition structures.

Again, recent investigations have indicated an interesting potential as a direct reducing agent in solvents such as ammonia, low molecular weight amines, and ethylenediamine.

Lithium differs in metallurgy...
inasmuch as the affinity of Lithium for oxygen, for example, is being utilized to reduce porosity in copper and copper alloy castings. Recent research has revealed that Lithium will produce brazing alloys with self-fluxing properties and increase the wetting ability of these alloys.

Lithium differs in inorganic chemistry . . .
the usefulness of Lithium Hydride and Lithium Aluminum Hydride in the preparation of other hydrides having already been widely demonstrated. Recent studies indicate that other complex hydrides prepared in a similar manner may prove to be interesting tools for research. The low dissociation pressure of Lithium Hydride at its melting point, to cite a specific example, is unique among all hydrides. LiH also has some slight solubility in polar organic compounds which is again unique among alkali metals.

Lithium differs in heat transfer . . .
based on its physical properties it has no equal as a liquid metal coolant. Due to corrosion caused at elevated temperatures by impurities in commercially available Lithium and Lithium Metal, Lithium has thus far found only experimental use.

Why don't *you* take a long look at Lithium? Its uniquely valuable differences in so many diverse fields may prove of great interest—and profit—to *you*. Write our PR&D department giving us details of the application you have in mind. Experimental quantities of Lithium Compounds are available on request.

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TECHNICAL LITERATURE

Absorbers, Ultraviolet.....Are added to plastics and protective coatings to prevent deterioration and discoloration caused by ultraviolet light. Company makes available complete information on line of Uvinuls.
120A Antara Chem. Div.

Acetaldehyde.....Eastman Acetaldehyde—pharmaceutical raw material . . . denaturant . . . chemical intermediate . . . etc. Announces the availability upon request of descriptive information and product samples.
120B Eastman Chem. Products.

Acetoacetarylamides.....Furnishes technical information on company's line of acetoacetarylamides. Includes physical properties, applications, physiological properties, etc. Request literature reference, No. F-8259.
120C Carbide & Carbon Chem.

Acetyl Peroxide.....Company makes available upon request a literature reference covering their line of acetyl peroxide. Includes a detailed outline of the physical and chemical properties. Bulletin No. 5.
127a *Becco Chem. Div.

Acetyl Peroxide.....A safe method of isolation of acetyl peroxide. Relatively pure acetyl peroxide may be isolated from its commercial solvent solution by vacuum distillation. For complete data refer to Bulletin 28.
127b *Becco Chem. Div.

Acetylene.....At Calvert City, Ky. and at Louisville, Ky., National Carbide can supply you with pipeline delivery of high purity carbide acetylene. Request copy of "The Chemical Century Comes to Calvert City."
120D National Carbide Co.

Acetylides, Sodium.....Acetylene & sodium combine to give sodium acetylides, which can be used as a raw material for many chemical reactions. Fact Sheet describes typical reactions, preparation & handling, etc.
120E Ethyl Corp.

Acid, Ascorbic.....The antiscorbutic vitamin . . . antioxidant in food industry . . . reduces smoking time, improves cure color, retards fading in cooked & cured meat products, etc. Technical Information Sheets.
120F Mallinckrodt Chem. Wks.

Acid, Acetic.....Acetic acid—glacial or standard strength, 80%-84% solutions. Aluminum tank cars or drums. Company announces the availability upon request of descriptive literature, samples and prices.
120G Crossett Chem. Co.

Acid, Acetic.....Eastman acetic acid features important uses; organic synthesis; reaction medium and solvent; dyeing assistant; etc. Makes available complete information, samples and specifications.
120H Eastman Chem. Products.

Acid, Adipic.....36 p. reference on adipic acid features an extensive literature survey. Includes sections on properties, toxicity & general chemistry of this versatile compound. Technical Bulletin 0-105 on request.
120I Monsanto Chem. Co.

Acid, Adipic.....Comprehensive 8 p. reference gives physical & chemical properties; principal reactions on the carboxyl & alpha methylene groups; solubility curve & suggested uses; etc. Technical Bulletin 1-12.
120J National Aniline Div.

Acid Anhydrous Hydrofluoric.....40 p. book contains valuable information concerning hydrofluoric acid anhydrous. Provides useful data for those who now use HF, or for those who are contemplating its use.
120K Harshaw Chem. Co.

Acid, Barbituric.....Properties: molecular weight—128.09; melting point—decomposes at 245°C±; solubility—soluble in hot water, slightly soluble in alcohol, soluble in ether. Technical Bulletin available.
120L Kay-Fries Chem.

Acid, Benzoic, Technical.....Develops a bead form of benzoic acid, technical. These tiny benzoic acid beads keep their shape during handling, right up to the time they go into process. Request Data Sheets.
120M Hooker Electrochem. Co.

Acid, n-Butyric.....Eastman n-butyric acid . . . for the preparation of butyric esters useful in formulating perfumes and flavorings. Announces the availability of technical information, specifications and samples.
120N Eastman Chem. Products.

Acid, Chromic.....72 p. Handbook covers chromic acid & its many metal-finishing applications. Subjects discussed range from physical & chemical properties to chromium plating formulas, specifications & equipment.
120O Diamond Alkali Co.

Acid, Citric.....Important chemical in many metal cleaning pastes & liquid formulations for both homes & industrial use. Data in "Ammonium Citrate & Citric Acid in Scale & Rust Removal," Bulletin No. 15.
120P Chas. Pfizer & Co.

Acid Crystals, Salicylic.....New & improved Sublimed Salicylic Acid Crystals feature shorter, broken needle structure & are offered in easy-to-handle standard containers. Request detailed information.
120Q Monsanto Chem. Co.

Acid, Dibasic.....New technical reference on Oronite Isophthalic. Includes information on: chemical and physical properties; advantages; reaction characteristics; isophthalic alkyds; etc. Bulletin No. 10.
120R Oronite Chem. Co.

Acid Esters, Itaconic.....9 p. describes 2 itaconic acid esters—dimethyl itaconate & di-n-butyl itaconate. Includes properties, reactions, molecular structures, toxicity, etc. Request Data Sheet No. 501.
120S Chas. Pfizer & Co.

Acid, Ethylenediamine Tetraacetic.....
"Tetrine" ethylenediamine tetraacetic acid & its salts for: sequestering unwanted metallic ions in processing textiles & synthetic rubber; etc. See detailed Catalog.
120T Glyco Products Co.

Acid, Formic.....A uniform product of high quality used in dyeing & finishing of textiles, tanning & dyeing of leather, for coagulating rubber, a raw material for manufacture of drugs, etc. Technical Bulletin.
120U Heyden Chem. Corp.

Acid, Fumaric.....Offers shorter drying time for alkyd resins, increased viscosity for rosin adducts. In purified form, it's an ideal acidulant for foods and pharmaceuticals. Technical Bulletin No. 46 + sample.
120V Chas. Pfizer & Co.

Acid, Gluconic.....New, index-type, technical reference outlines uses & properties of gluconic acid. Includes charts, reactions, derivatives, applications, assay data, specifications, etc. Booklet No. 22.
120W Chas. Pfizer & Co.

Acid, Hydrobromic.....Bromide intermediates, made with hydrobromic acid, often provide a higher yield of finished products and more economical production. For complete information, see Catalog.
120X Michigan Chem. Corp.

Acid, Hydrofluoric.....Anhydrous "HF" can be used for catalyst and fluorinating agent. Aqueous "HF" can be used for steel pickling, glass frosting and etching, ore flotation, etc. Request literature.
70 *General Chem. Div.

Acid, Isosebacic.....Technical Data reference covers U. S. I. Isosebacic Acid. Includes appearance, tentative specifications, physical & chemical properties, solubility data, vapor pressure, suggested uses, etc.
120Y U. S. Industrial Chem. Co.

Acid, Itaconic.....20 p. paper bound, index-type technical bulletin outlines uses & properties of itaconic acid—a versatile organic compound made in commercial volume by fermentation. Request Booklet No. 82.
120Z Chas. Pfizer & Co.

Acid, Kojic.....Forms stable metal chelates, pyridones and pyridines, ethers and esters, condensation products and compounds substituted in the side chain and nucleus. Technical data and product sample.
120AA Chas. Pfizer & Co.

Acid-Monohydrate, p-Toluene Sulfonic.....Technical Bulletin contains detailed information on toluene sulfonic acid-solid (high para) & para-toluene sulfonic acid-monohydrate. Includes specifications & reference literature.
120BB Hydrocarbon Chem.

Acid, Muriatic.....Produced from inorganic materials and, at the Niagara Falls Plant, is made directly by burning hydrogen with chlorine. You can be sure of its purity and quality. Samples on request.
120CC International Minerals & Chem.

Acid, Muriatic.....Features high purity muriatic acid—Hooker White. This special grade muriatic is entirely free of arsenic. Contains .003% or less sulfates, & .0001% or less iron. Technical Data Sheet.
120DD Hooker Electrochem. Co.

Acid, Naphthenic.....12 p. Technical Bulletin includes: chemical & physical properties; uses of naphtenic acids & derivatives (as driers for paints & varnishes, as fungicides, as emulsifying agents, etc.).
120EE Oronite Chem. Co.

Acid, Oxalic.....Because Pfizer oxalic acid solubilizes iron oxide, it is chief ingredient in radiator cleaning compounds. Company makes available complete information in detailed Technical Bulletin No. 34.
120FF Chas. Pfizer & Co.

Acid, Peracetic.....Company announces the availability of a valuable article reprint entitled, "Application of Peracetic Acid Germicidal Washes to Mold Control of Tomatoes." Request Bulletin No. 15A.
127c *Becco Chem. Div.

Acid, Peracetic.....Peracetic acid 40%, a new germicide-fungicide for the food industry—covers general & germicidal properties & use for fermicidal washes for produce & processing equipment. Bulletin No. 15.
127d *Becco Chem. Div.

Acid, Peracetic.....New technical booklet describes efficient hydrogen peroxide-resin techniques. Request "Hydrogen Peroxide-Resin Technique for the Preparation of Peracetic Acid." Bulletin No. P 63-355.
120GG E. I. du Pont de Nemours.

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TECHNICAL LITERATURE

Acid, Peracetic—

Amyl Acetates, Primary

Acid, Peracetic.....Successful bleaching of type 670 nylon—article reprint contains detailed mill procedures for bleaching nylon type 670 and nylon type 200 with peracetic acid. Request Bulletin No. 60.
127e *Becco Chem. Div.

Acid, Peracetic (40%).....Chemical and physical properties of peracetic acid are discussed and examples of typical reactions and uses given. Other data pertains to precautions in handling material. Bulletin No. 4.
127f *Becco Chem. Div.

Acid Phosphates, Alkyl.....Available in quantities ranging from experimental to semi-commercial — methyl acid phosphate—n-Butyl acid phosphate—amyl acid phosphate—iso octyl acid phosphate—etc. Data & samples.
122A Oldbury Electro-Chem. Co.

Acid, Phosphomolybdic.....Releases descriptive literature—"Preparation of Phosphomolybdic Acid from Phosphoric Acid and Pure Molybdic Acid." Details laboratory method of producing phosphomolybdic acid.
122B Climax Molybdenum Co.

Acid, Phosphomolybdic.....Offers reprint, "Contribution to the Chemistry of Phosphomolybdic Acids, Phosphotungstic Acids, & Allied Substances." Preparation, analysis & analytical uses of these complex acids.
122C Climax Molybdenum Co.

Acid, Phosphoric.....Pickling & coating for bonding in one dip—another fast-growing use of AA Quality Phosphoric Acid. This chemical assures utmost quality with economy. Data Sheet & product samples.
122D American Agricultural Chem.

Acid, Propionic.....Eastman acids & anhydrides have been called "the standard of the industry." Propionic acid features valuable application in organic synthesis. Offers detailed information & product samples.
122E Eastman Chem. Products.

Acid, Silicic SI......Fine, white, bulky powder; odorless. Used in the manufacture of silicate phosphors for fluorescent and television tubes. Offers complete details in company's Technical Information Sheet.
122F Mallinckrodt Chem. Wks.

Acid, Sorbic.....Sorbic is a refined sorbic acid company sells for use in foods. It is an important new selective inhibitor for molds & yeast. Covers properties, solubility in various solvents, etc. Book F-8526A.
122G Carbide & Carbon Chem.

Acid, Toluic.....A mixture of isomeric toluic acids, consisting largely of the meta isomer, with a smaller proportion of para toluic & minor amounts of ortho toluic & benzoic acids. Technical Bulletin No. 12.
122H Oronite Chem. Co.

Acids, Fatty.....24 p. booklet offers specifications, grades, packing & stock points on distilled stearic, oleic, coconut, cotton seed, soya & palm fatty acids. Request "Fatty Acids in Modern Industry."
122I A. Gross & Co.

Acids, Fatty.....Empol 1022 Polymerized Fatty Acid features new uses for polyesters, polyamides, esters, amides, soaps & other derivatives in such fields as adhesives, coatings, etc. Technical literature.
122J Emery Industries.

Acids, Fatty.....Armour's 2-system fractionation assures you of uniformity & highest purity in Neo-Fat fatty acids. "The Chemistry of Fatty Acids," 48 p. brochure, & Specification Chart is available upon request.
122K Armour Chem. Div.

Acids, Fatty.....Superior Armour Red Oil has low pour point, low unsaponifiable and high oleic content. Consistently uniform in composition and quality. Request details on Neo-Fat 94-04 Red Oil.
122L Armour Chem. Div.

Acids, Oleic.....Presents 24 p. illustrated booklet to point out the various means of evaluating oleic acids consistent with their real worth, with emphasis on end-product performance. Brochure No. EM-825.
122M Emery Industries.

Acrolein.....Issues a new data folder on Acrolein. Includes: physical properties; shipping data; applications; typical reactions; derivatives of acrolein; physiological properties; etc. 24 p. Ref. No. F-7389C.
122N Carbide & Carbon Chem.

Acrylonitrile.....Reacts with halogens & pseudohalogens under mild conditions to give a number of interesting & reactive compounds in fair to good yields. For detailed information, request Technical Bulletin PD5.
122O American Cyanamid Co.

Acrylonitrile.....Comprehensive information on acrylonitrile includes types of reactions, applications, physical properties, specifications, net container contents, physiological properties. Book No. F-8281.
122P Carbide & Carbon Chem.

Alcohol, Furfuryl.....Derived from agricultural residues & useful in manufacture of wide variety of products including resinous mortars, cements, binder resins, etc. Data on properties & uses in Bulletin 205.
122Q Quaker Oats Co.

Alcohol, Isooctyl.....Indoll Isooctyl Alcohol (bp 184-190°C) is a primary alcohol of outstanding esterification quality. Its principal isomeric components are the dimethyl hexanols. See Technical Bulletin No. 22.
122R Indoll Chem. Co.

Alcohol, Polyvinyl.....Your product will enjoy wider acceptance for better sales & increased profit when you use Colton Vinol polyvinyl alcohol. Rigidly controlled for uniformly high quality. Data & samples.
122S Colton Chem. Co.

Alcohol, Polyvinyl.....Lemols can be used as emulsifiers & stabilizers . . . in adhesives . . . for paper coatings & saturants . . . for textile sizings & finishes . . . for binders . . . etc. Request data & samples.
122T Borden Co.

Alcohol, Polyvinyl.....Just a small amount of Elvanol is all that is needed to make highly stable dispersions or emulsions of mineral and vegetable oils, many resins, waxes, organic solvents, etc. Complete information.
122U E. I. du Pont de Nemours.

Alcohol, Primary.....16 p. reference describes Hercules Abitol, a primary alcohol . . . viscous . . . resinous . . . high molecular weight. Includes physical and chemical properties, applications, use in alkyd resins.
122V Hercules Powder Co.

Alcohol, Propargyl.....Three centers of reactivity. Chemical intermediate for pharmaceuticals, agricultural chemicals, etc. Corrosion inhibitor and stabilizer for halogenated compounds. Technical information and samples.
122W General Aniline & Film Corp.

Alcohol, Tetrahydrofurfuryl.....New 28 p. booklet contains charts & tables, physical data & chemistry, uses, safety & physiological data, and general information. For details, see Bulletin 206.
122X Quaker Oats Co.

Alcohols, Fatty.....Lorol fatty alcohols have wide application as chemical intermediates in preparation of certain pharmaceuticals, synthetic detergent & cosmetic products. Complete information.
122Y E. I. du Pont de Nemours.

Alcohols, Fatty.....“Survey of Cachalot Brand Fatty Alcohols,” a new 12 p. booklet, describes large line of straight-chain aliphatic alcohols. Includes properties, applications, typical reactions, solubilities, etc.
122Z M. Michel & Co.

Alcohols, Fatty.....New fact sheet gives typical reactions. Fatty alcohols can be used for detergents, chemical specialties, plastics, textiles, rubber, metal, petroleum & paint. “Fatty Alcohols for Industry.”
122AA Ethyl Corp.

Alcohols, Higher.....Offers a diversified line of petrochemicals for industry—includes higher oxo alcohols (isooctyl alcohol, decyl alcohol, tridecyl alcohol). Company makes detailed information available.
117a *Enjay Co.

Alcohols, Lauryl.....ADM's new lauryl fatty alcohols—of improved properties, higher purity—are derived from vegetable oils and fats. Makes available on request samples and advanced Technical Bulletins.
122BB Archer-Daniels-Midland Co.

Alcohols, Lower.....Ethyl Alcohol for detergents or Isopropyl Alcohol for rubbing. Your detergents scrub better and your alcohols rub better when formulated with Enjay Lower Alcohols. Request complete details.
117b *Enjay Co.

Alcohols, Primary Decyl.....An important intermediate in the manufacture of plasticizers and diester lubricants for jet aircraft. Useful as a solvent for gums, resins, waxes, oils, fats, and dyestuffs. Bulletin F-8922.
122CC Carbide & Carbon Chem.

Aldehydes.....Fully illustrated, 38 p. catalog presents the latest data on aldehydes & dialdehydes, including physical properties, shipping, physical property charts & graphs, & test methods. Reference F-5278C.
122DD Carbide & Carbon Chem.

Algicides.....Oronite Algicide ATM-50 is a convenient & effective reagent for the control of biological fouling in industrial cooling water systems. Data, properties & analytical methods in Bulletin (Cationics A-2).
122EE Oronite Chem. Co.

Alicyclic Compounds.....Informative literature describes Arapahoe line of alicyclic compounds . . . for the pharmaceutical, perfume, and allied industries. Company also furnishes valuable product samples.
122FF Arapahoe Chem.

Alkyl Benzyl Triethyl Ammonium Chloride.....Describes Emcol E-11: uses (deodorant, sanitation, laundry, etc.); chemical & physical properties; general data; bacteriology. Technical Bulletin No. 45.
122GG Emulsol Chem. Corp.

Alumina.....Of many electrochemically refined materials produced by company, Alundum fused alpha alumina is one of the most useful. Request “Norton Refractory Grain—Electrochemically Refined.”
122HH Norton Co.

Need some equipment?

Then you'll find this issue's Inventory of New Equipment right up your alley. It's a digest of the past year's major new developments in process equipment, the first complete roundup of its kind. You'll find it a handy tool for years to come (p. 145).

Alumina, Activated.....New Product Data Sheet furnishes a detailed technical description of Reynolds Activated Alumina. Includes advantages, applications, chemical specifications, etc. Request Form No. C4-5-755.
123A Reynolds Metals Co.

Alumina, Activated.....Ideal desiccant for HF Alkylation. It is more economical and effective for drying many liquids and gases. New product Data Sheets give full details. Request Nos. R-2101, R-2102.
123B Reynolds Metals Co.

Alumina, Activated....."Activated Alumina Maintenance Program—Power System Oils" details use of activated alumina for maintenance of insulation oil and lubricants. 120 p.; samples also available.
123C Aluminum Co. of America.

Alumina, Calcined, Ceramic Grade..... Specially processed for maximum consistency and minimum shrinkage. Uses include: kiln furniture; chemical porcelain; insulator bodies; whiteware; etc. Data and samples.
123D Reynolds Metals Co.

Alumina, Trihydrate.....Commercial, organic free alumina trihydrate—a pure, snow white hydrated alumina, free from contaminants. A low-cost source of soluble alumina. Data Sheets R-5002, R-5003 & samples.
123E Reynolds Metals Co.

Aluminum Chloride.....Solvay Anhydrous Aluminum Chloride (Elberta Brand) is produced as a high quality crystal-line solid in a variety of granulations, from extra fine to coarse screened. Request literature.
11 *Solvay Process Div.

Aluminum Chloride.....Surface area of a solid catalyst, such as aluminum chloride, bears an important relationship to reaction rate. That's why company produces it in 4 different mesh sizes. Full data.
123F Hooker Electrochem. Co.

Aluminum Fluoride, Powder, Technical.....Makes available an informative Data Sheet which offers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-32521.
123G Baker & Adamson.

Aluminum Powders.....A wide variety of flake, powders and pastes are available. Uses: reducing agent; production of aluminum compounds; paints; explosives; etc. Request product samples and complete information.
123H Reynolds Metals Co.

Aluminum Stearate Technical D Powder.....Soluble or dispersible in a wide variety of organic media, used as a gelling agent for lubricating greases and thickened oils. Details in Technical Information Sheet.
123I Mallinckrodt Chem. Wks.

Amides, Fatty.....Company offers valuable information in their booklet "Armids" describing fatty amides. Information includes chemical properties, specifications, applications, test results, procedures, etc.
79f *Armour Chem. Div.

Amines, Aliphatic.....More than 400 original literature sources were used to develop sections on applications, chemical reactions, toxicology & physical properties of amines, in 52 p. book, "Sharples Amines."
123J Sharples Chem.

Amines, Dimethyl Tertiary.....Descriptive reference covers: solubility; typical analysis of tertiary amines; reactions of tertiary amines; applications for tertiary amines; etc. Request 6 p. Technical Bulletin No. B-2.
123K Armour Chem. Div.

Amines, Fatty.....Valuable information contained in the reference booklet, "Armeens", concerning Fatty Amines. Includes chemical properties, specifications, applications, test results & procedures.
79b *Armour Chem. Div.

Aminoethyl Ethanolamine.....A hygroscopic liquid with a medium viscosity and a mild, ammoniacal odor. Describes applications, physical properties, specifications, handling precautions, etc., in Booklet No. F-6455A.
123L Carbide & Carbon Chem.

2-Amino-2-Methyl-1-Propanol.....Industry calls for AMP (2-amino-2-methyl-1-propanol) as a highly effective emulsifier and chemical intermediate. Makes available product samples and Technical Data Sheet No. 18.
123M Commercial Solvents Corp.

p-Aminophenol.....Currently this chemical is used to prepare pharmaceuticals, dyes, photographic chemicals, oil additives and anti-oxidants. Perhaps it can help you in your work. Request descriptive information.
123N E. I. du Pont de Nemours.

Ammonium Bicarbonate..... Solvay Ammonium Bicarbonate is a safe, low-cost source of ammonia and carbon dioxide. Makes available detailed technical information in addition to a test product sample.
123O Solvay Process Div.

Ammonium Persulfate..... Company makes available on request a literature reference covering line of ammonium persulfate. Includes data on chemical & physical properties, uses & handling. Product Bulletin No. 49.
127g *Becco Chem. Div.

Ammonium Thiocyanate.....Valuable Ammonium Thiocyanate Product Bulletin gives detailed data on properties and uses of Ammonium Thiocyanate, properties of aqueous solutions of Ammonium Thiocyanate, etc.
123P J. T. Baker Chem. Co.

Amyl Acetates, Primary.....Physical properties, specifications & shipping data, uses, resin solubilities & data on performance of primary amyl acetates in nitrocellulose lacquers discussed in Bulletin F-8911.
123Q Carbide & Carbon Chem.

Anhydrides.....Booklet gives suggested uses, physical properties, specifications, test methods, shipping data, and constant boiling mixtures for the anhydrides currently offered by Carbide. Booklet F-5280.
123R Carbide & Carbon Chem.

* From advertisement, this issue.

How The Reader Service Postcards Can Help You

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Chemicals & Materials.....page 71
Equipment & Accessories...page 145
Index .....page 361

Every item in each of these sections is coded. Simply write in the code number of the items in which you're interested, fill in your name and address, then mail. Answers come to you direct from the manufacturers.

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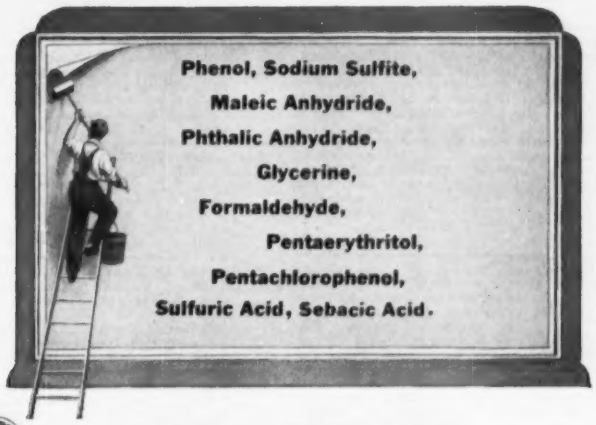
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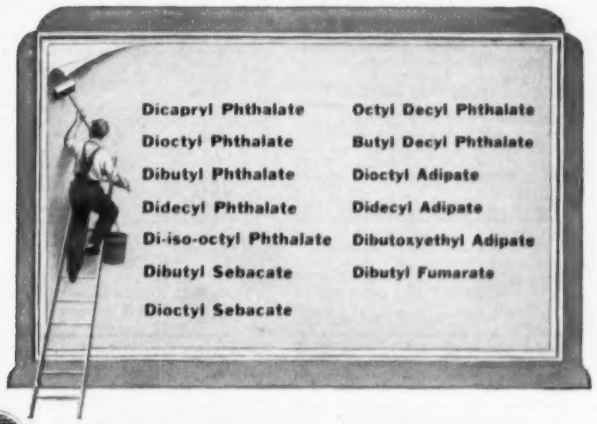
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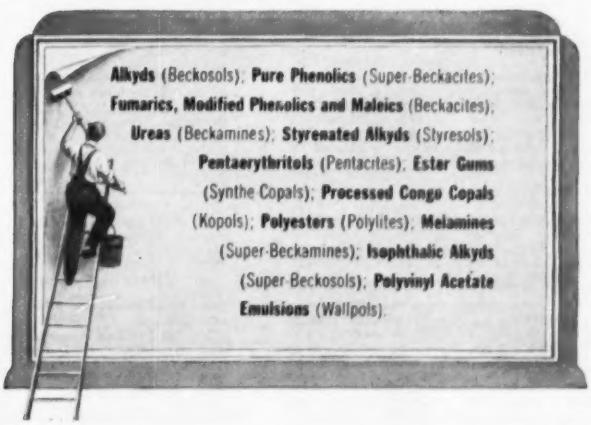
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SYNTHETIC RESINS



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1956 INVENTORY

TECHNICAL LITERATURE

Antioxidants—

Bleaching Textile

Antioxidants.....Antioxidant 425 offers greater protection against discoloration of rubber stocks. Technical Bulletin No. 840 contains complete and up-to-date information on the properties and behavior. 28 p.
125A American Cyanamid Co.

Antioxidants.....New 24 p. Technical Bulletin describes in detail results of experiments & tests with antioxidant additive for gasolines—2, 6-di-tertiary-butyl-para-cresol (DBPC). Request Bulletin C-5-179.
125B Koppers Co.

Aromatics.....High-quality aromatics feature these purity advantages: no paraffinic impurities; free of sulphur compounds (RSH, H_2S, SO_2, Thiophene), low acid wash (0 to 1). Technical Bulletin 109-53.
125C Cosden Petroleum Corp.

Aromatics, High Purity.....Toluol (1° nitration grade), Xylol (8°), and Paraxylene (98°) are being produced by modern Udex extraction facilities. Available in full, or split tank car quantities. Request information.
17b *Sinclair Chem.

Attapulgite, Colloidal, Grit-Free..... Gives suggested formulations and procedures for suspending pigments, abrasives and other solids in water suspensions and oil suspensions. Technical Bulletin No. SD-31.
125D Minerals & Chem. Corp.

Benzaldehyde.....Heyden offers two grades—N.F. (F.F.C.) & Technical—of this versatile intermediate for dyes, pharmaceuticals, chemicals, essential oils, etc. Samples & technical information upon request.
125E Heyden Chem. Corp.

Biphenyl, Chlorinated.....Reports received from installations show that Monsanto Aroclor 1248 . . . a chlorinated biphenyl . . . is proving to be a superior heat-transfer medium. Technical Bulletin O-P-130.
125F Monsanto Chem. Co.

3,3' - Bitolylene 4,4' - Diisocyanate..... Technical information available on Nacconate 200. Includes: typical analysis; chemical properties and suggested uses; physiological properties; etc. Technical Bulletin I-17D.
125G National Aniline Div.

Bleaching, Pulp.....Groundwood bleaching is used as example of a complex process in which many variables affect final results. Statistical methods applicable to this described in details. Bulletin No. 31.
127h *Becco Chem. Div.

Bleaching, Textile.....Makes available valuable literature reference entitled, "Analysis of Peracetic Acid Bleaching Solutions." A detailed analytical procedure is given. Request No. 25.
127i *Becco Chem. Div.

Bleaching, Textile.....Detailed literature offers a description of dye house practice using hydrogen peroxide for dye oxidation on the jig, packaged and continuous machines. Request Bulletin No. 38 now available.
125H Becco Chem. Div.

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TECHNICAL LITERATURE

Bleaching Textile—

Chemicals

Bleaching, Textile ..... "Fluorescent Agents in Hydrogen Peroxide Bleaching of Knit Goods" discusses practical application of optical bleaching agents to peroxide bleaching of knit goods. Bulletin 53.
127J *Becco Chem. Div.

Bleaching, Textile.....Makes available article reprint, "Knit-Goods Bleaching Range" . . . a description of high capacity continuous range for tension-free bleaching of knit goods. Bulletin No. 61.
127k *Becco Chem. Div.

Boron Carbide.....Data book, "Handbook on Boron Carbide & Elemental Boron" is a valuable reference containing both fundamental data & practical information. Useful to those interested in atomic energy, etc.
126A Norton Co.

Boron Trifluoride.....Universal catalyst for polymerization, alkylation, esterification, acylation, and many other reactions. Company makes detailed information available on properties and some uses.
131 *Baker & Adamson.

Boron Trifluoride, Ether Complex, Technical.....Presents informative Data Sheet which gives pertient details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-34711.
126B Baker & Adamson.

Brake Fluid, Hydraulic.....Announces availability of an illustrated, 8 p. reprint describing hydraulic brake fluid SAE 70R. Includes heavy-duty type (SAE 70R1) & moderate-duty type (SAE 70R2). Book F-40002.
126C Carbide & Carbon Chem.

Butadiene-Acrylonitrile Copolymer..... Reference includes: typical gum properties; typical vulcanizates; typical physical properties of vulcanisates; compounding and processing characteristics; etc. Ref. No. 55-339.
126D Goodyear Tire & Rubber Co.

1, 4-Butanediol.....Reacts as dihydric alcohol. Chemical intermediate for polyesters, polyurethanes, polyamides & cyclic compounds. For use in plasticizers, resins, fibers. Technical information & product samples.
126E General Aniline & Film Corp.

Butyl Oleate.....Witco butyl oleate is a stable, non-volatile, oily liquid, which will not solidify under normal winter conditions. Description & information on properties contained in Technical Service Bulletin E-8.
126F Witco Chem. Co.

Butyrolactone.....Powerful organic solvent for polyacrylonitrile, cellulose acetate, polystyrene, etc. Selective solvent for acetylene in natural gas. Announces the availability of technical information and samples.
126G General Aniline & Film Corp.

Calcium Carbonates.....Illustrated, 20 p. booklet, "Witco Witcarbs in Paints," offers valuable data on line of pure calcium carbonates. Includes features and the physical and chemical properties. Request Bulletin 54-3.
126H Witco Chem. Co.

Calcium Carbonates, Precipitated..... "Diamond Precipitated Calcium Carbonates for the Rubber Industry"—illustrated, 36 p. reviews application of precipitated calcium carbonates as fillers for natural rubber compounds.
126I Diamond Alkali Co.

Calcium Chloride.....2 bulletins offer tables, graphs, applications. Cover properties, use, and control of straight calcium chloride as brine medium in refrigeration and ice manufacturing systems. Bulletins Nos. 4 & 16.
126J Solvay Process Div.

Calcium Glucoheptonate CP & Purified.....Soluble in water in all proportions. Used for calcium therapy by injection and for milk fever. May be used alone or to solubilize calcium gluconate. Leaflet available.
126K Pfanstiehl Labs.

Calcium Gluconate USP Powder.....An ingredient in many pharmaceutical preparations. Calcium gluconate is used almost exclusively for treatment of calcium deficiency in humans & animals. Technical Information Sheet.
126L Mallinckrodt Chem. Wks.

Calcium Hydride.....Supplies important data on physical properties, chemical properties and applications, handling and storage, available forms and references on company line of calcium hydride. Bulletin 201-D.
126M Metal Hydrides.

Calcium Nitrate, Technical.....Baker Calcium Nitrate, Tech. in thin flat flakes . . . faster dissolving, uniform purity-lot after lot, controlled water of hydration, easier to handle. Request samples & prices.
126N J. T. Baker Chem. Co.

Calcium Silicates, Synthetic.....New Micro-Cel line can produce many desirable effects: absorption of liquids; uniform dry dispersion; viscosity control; anti-caking agent; etc. Data & product samples.
126O Johns-Manville.

Caprolactam.....Available for first time in large tonnage, National Caprolactam should find important uses in new organic chemical developments. 12 p. covers physical properties, chemical reactions, etc. Bulletin 1-14.
126P National Aniline Div.

Carbon, Activated.....Details uses, advantages, requirements, specifications & characteristics of activated carbon in purification of liquids, decolorizing, filtration & similar applications. Tech. Bulletin 13.
126Q Barnebey-Cheney Co.

Carbon, Activated.....Selection of proper grades & types for industrial processes, characteristics of Adsorbite activated carbon & application of activated carbon processes, covered in Bulletin No. 11.
126R Barnebey-Cheney Co.

Carbon, Activated.....“Darco” activated carbons are used for purifying, deodorizing, decolorizing, in production of sugar, beer, drugs, edible oils, chemicals, etc. Request technical data and free samples.
97h *Atlas Powder Co.

Carbon, Activated.....Air pollution and its control through the application of activated carbon is explored in a new technical reference entitled, “Air Pollution Control With Activated Carbon.” Bulletin E-21.
126S Barnebey-Cheney Co.

Carbon, Activated.....Announces the availability of informative product literature—“How Seven Industries saved $150,000,000 a Year with Columbia Activated Carbon.” Request 16 p. illustrated Booklet F-6658C.
126T Carbide & Carbon Chem.

Carbon, Activated.....Illustrated, 6 p. Folder contains descriptive information on Girdler Activated Carbon G-32. Includes: numerous applications; characteristics and properties of activated carbon; etc.
126U Girdler Co.

Carbon, Activated.....Pittsburgh Type BPL granular activated carbon designed to solve vapor phase adsorption problems more efficiently & at lower cost than any other similar material. Samples & data.
126V Pittsburgh Coke & Chem. Co.

Carbon Black.....Company offers a 68 p. reference, “Witco Blacks in Natural and Chemical Rubbers,” covering their product line of carbon blacks. Includes complete information on properties. Bulletin 54-1.
126W Witco Chem. Co.

Carbon Dioxide.....There’s practically no end to the important jobs that CO_2 combined with Liquid Carbonic savvy—is doing. For examples of CO_2’s amazingly diversified talents, request “Applications Unlimited.”
126X Liquid Carbonic Corp.

Carbon Dosage.....If you are now using activated carbon in a single-step treatment, split feeding may save you a worthwhile percentage of your carbon cost. New booklet outlines basic principles of this method.
126Y Atlas Powder Co.

Carbonate of Potash.....Company announces the availability upon request of a fully illustrated booklet, “Nialk Caustic Potash, Carbonate of Potash,” containing valuable data on the use and handling of these chemicals.
126Z Niagara Alkali Co.

Carbonate of Potash.....Nialk Carbonate of Potash is supplied in 48% and 52% solutions, and in solid forms as 83.5% to 84% hydrate, and as calcined (less than 1% H_2O. Request data on this new Hooker chemical.
126AA Hooker Electrochem. Co.

Carbons, Metallurgical.....New technical bulletin discusses chemical and physical characteristics of metallurgical carbons. Details the grades, elemental contents and available mesh sizes. Bulletin J-35.
126BB Barnebey-Cheney Co.

Carriers, Catalyst.....Alundum carriers prove highly successful in reactions such as those involved in manufacture of phthalic anhydride, maleic anhydride and oxidation of ethylene. Full details in Bulletin No. 7.
35-8a *Norton Co.

Catalyst Supports.....Seventeen compositions . . . three degrees of porosity . . . symmetrical or Poly-surface pellets—your pick of catalyst supports. Offers technical literature with complete information.
126CC Carborundum Co.

Catalyst Supports.....Made of dense, rugged, chemically inert material—have great resistance to breakdown—no chemically reactive effect on processing. Used in suspending beds for active catalysts. Request data.
35-8b *Norton Co.

Catalysts.....You benefit with Girdler catalysts: custom design matches your needs; technical service helps you save; quality control assures uniformity; etc. For complete information, request Bulletin G-260.
126DD Girdler Co.

Catalysts.....“Harshaw Catalysts . . . Made to Your Specifications” includes sections on: the history of catalysts; typical Harshaw catalysts and how they are used; catalytic chemicals supplied by Harshaw, etc. 8 p.
126EE Harshaw Chem. Co.

Catalysts, Molybdenum.....New reference, “Molybdenum Catalysts for Industrial Processes,” includes information on: increased molybdenum catalyst utilization; reactions using molybdenum catalysts, etc. 24 p.
126FF Climax Molybdenum Co.

Catalysts, Platinum.....World’s largest manufacturer of platinum metals catalysts issues a new book outlining the general advantages and applications of platinum catalysts in surprisingly diversified applications. 24 p.
126GG Baker & Co.

Caustic Potash.....Solvay Mercury Cell Caustic Potash has set new standards for whiteness and purity with only trace quantities of metals and chloride—and is chlorate-free. Request samples, prices & data.
126HH Solvay Process Div.

Caustic Potash.....Nialk Caustic Potash is available in 45% to 52% solutions, & in the following solid forms as 90% & as 85% (low chloride) material: solid, flake, granulated, broken, crushed & walnut. Full data.
126II Hooker Electrochem. Co.

* From advertisement, this issue.

1956 INVENTORY

Cellulose Acetate Butyrate.....44 p. "workbook" contains latest data on formulation & use of new & interesting film-forming material, "Half-Second Butyrate"—its properties, modifications & applications.
127A Eastman Chem. Products.

Cellulose Derivatives.....Revised booklet lists chemical materials that are made and sold by Hercules' Cellulose Products Dept. Presents uses, types available, shipping data and properties. Available on request.
127B Hercules Powder Co.

Charcoal.....Company makes available upon request descriptive literature, product samples and price information on their line of charcoal . . . Royal Oak Brand hardwood charcoal. Product is available in quantities.
127C Crossett Chem. Co.

Chelates.....Iron deficiency in plant life is present in nearly every region of the earth. Perma Green Iron 135 (most effective organic iron chelate for all soils) corrects this iron deficiency. Illustrated, 12 p.
127D Refined Products Corp.

Chelating & Sequestering Agents..... Catalog gives a full description of effect & use of "Tetrines," which chelate & sequester contaminating polyvalent metallic ions which affect emulsion stability.
127E Glyco Products Co.

Chemicals.....8 p. folder, "Victor Chemical Works," outlines principal uses of products. Includes aluminum formate, aluminum phosphates, dicalcium phosphate, phosphoric acids, ferric phosphates, sodium formate.
127F Victor Chem. Wks.

Chemicals.....Illustrated, 40 p. bulletin, "Eastman Chemical Products" (Seventh Edition) includes data on product line of acids & anhydrides, alcohols, aldehydes, plasticizers, solvents, amines, phenols, etc.
127G Eastman Chem. Products.

Chemicals.....Company offers a valuable "Armour Chemical Catalog", a complete catalog of all Armour Chemicals. Chemicals listed include fatty acids, fatty acid derivatives, and industrial oils.
79g *Armour Chem. Div.

Chemicals.....44 p. Catalog covers essential properties & uses on chemicals & allied chemical specialties. Includes industrial chemicals, Globrite cleaners, phosphating agents & strippers, fluxes, and many others.
127H Globe Chem. Co.

Chemicals.....A new Catalogue listing prices and properties of more than 400 chemicals especially developed for use in industrial and research laboratories in the field of polymerization is now available.
127I Borden Co.

Chemicals.....Company announces the availability upon request of their Fall Sales Bulletin, which lists 24 different product lines for research and development by industry, agriculture, and medicine.
127J Lachat Biochemical Co.

Chemicals.....Mallinckrodt's flexible production facilities are geared to precision manufacture of chemicals from a few tons to carload lots. Brochure lists and describes company's chemicals and their uses.
127K Mallinckrodt Chem. Wks.

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41. Becco Hydrogen Peroxide 35% Formula F.
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46. Concentrated Hydrogen Peroxide.
50. History of the Hydrogen Peroxide Industry.
54. Self-Heating of H_2O_2 Storage Vessels.
55. Stability of Pure Hydrogen Peroxide.
59. The Analysis of H_2O_2 Solutions.
62. Hydrogen Peroxide Vapor.
67. Hydrogen Peroxide Physical Properties Data Book (Price $1.00 prepaid).
70. Becco Hydrogen Peroxide SP "100".
77. Concentrated Hydrogen Peroxide as a Propellant.

PERSULFATES

11. Potassium Persulfate.
34. Uses of Persulfates—A Bibliography, Part I.
49. Ammonium Persulfate.
68. Uses of Persulfates—A Bibliography, Part II.

SODIUM PERBORATE

45. Sodium Perborate.

PERACETIC ACID

4. Peracetic Acid 40%.
24. Analysis of Aliphatic Peracids.

PEROXYGEN COMPOUNDS

1. Active Oxygen Chemicals.
5. Acetyl Peroxide.
6. Sodium Carbonate Peroxide.
7. Alkaline Earth Metal Peroxides.
8. Sodium Pyrophosphate Peroxide.
10. Urea Peroxide.
28. A Safe Method of Isolation of Acetyl Peroxide.

TEXTILE BLEACHING

25. Analysis of Peracetic Acid Bleaching Solutions.
29. Hydrogen Peroxide Dry-In Process for Bleaching Wool.
35. Modification of Wool with Peroxygen Compounds.
43. Treatment of Cellulose and Cellulose Derivatives with Peroxygen Compounds.
52. Bleaching with Some Peroxygen Chemicals.
53. Fluorescent Agents in Hydrogen Peroxide Bleaching of Knit Goods.
60. Successful Bleaching of Type 670 Nylon.
61. Knit-Goods Bleaching Range.
71. Continuous Bleaching of Cottons with Silicate-Free Peroxide Solutions.
75. Oxidation of Dyes on Cottons and Synthetics with Peroxygen Chemicals.

PULP BLEACHING

31. Groundwood Bleaching Variables — A Statistical Approach.
32. Hydrogen Peroxide Bleaching of Chemical and Mechanical Pulps.
47. Peroxide Bleaching of Pulps.
48. High-Density Pulp Bleaching Processes.
64. Development Studies on Last-Stage Peroxide Bleaching of Alkaline Pulps.
65. Peroxide Bleaching of Southern Pulps.
66. Becco Laboratory Procedures for Pulp Bleaching, 1955 Edition.

MISCELLANEOUS

15. Peracetic Acid 40%, A New Germicide-Fungicide for the Food Industry.
15A. Application of Peracetic Acid Germicidal Washes to Mold Control of Tomatoes.
17. Oxidation Reactions with Aliphatic Peracids.
26. Purification of Metal Salt Solutions with Hydrogen Peroxide.
27. Modification of Starches, Proteins and Gums with Peroxygen Chemicals.
33. Seed Treatments with Peroxygen Chemicals.
36. Progress in Peroxides.
39. Surface Treatment of Metals with Peroxygen Compounds, Part I.
51. Surface Treatment of Metals with Peroxygen Compounds, Part II.
56. Epoxy Fatty Acid Ester Plasticizers.
58. Epoxidation-Hydroxylation Reactions.
63. Action of Silver-Catalyzed Persulfate on 1,2-Glycols.
69. Epoxidation-Hydroxylation Reactions.
72. Octylene Oxide, New Olefin Epoxide.
73. Dodecane Oxide, New Olefin Epoxide.
74. C_{16}-C_{18} Olefin Oxide.
76. Epoxy Compounds from Unsaturated Fatty Acid Esters.

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TECHNICAL LITERATURE

Chemicals—

Detergents

Chemicals.....In completely revised & simplified Chemical Catalog, you will find a distinctive & definite line of auxiliaries in condensation—enzymes, detergents, water-repellents, wetting agents, oils, etc.
128A Jacques Wolf & Co.

Chemicals.....Bulletin lists products available from commercial production. Gives commercial products, custom manufacturing, developmental products & research interests. For further information, ask for Bulletin No. 2.
128B Maumee Chemical Co.

Chemicals.....The 1956 Fisher Chemical Index lists over 7300 chemicals. It gives structural formulas, formula weights, melting and boiling points, and color-index numbers. Available on request—Catalog 120-C.
128C Fisher Scientific Co.

Chemicals.....'Ready Reference to the Chemicals You Live By" is a pocket-size folder which provides a handy, helpful list of Diamond chemicals for quick reference. Copies are available upon request.
128D Diamond Alkali Co.

Chemicals.....Valuable reference lists the properties and uses of some 350 of the more than 600 basic industrial, pharmaceutical, and agricultural chemicals currently produced by the Dow Chemical Company. 36 p.
128E Dow Chem. Co.

Chemicals.....16 p. booklet lists the many chemicals available from Harshaw. Some typical products are: vinyl stabilizers; fluorides; glycerine; fungicides; synthetic optical crystals; agricultural chemicals.
128F Harshaw Chem. Co.

Chemicals.....New Price List Catalog covers essential oils, aromatic chemicals, resinoids, oleoresins, balsams, tinctures, colors, sesquiterpeneless & terpeneless oils. Literature available on request.
128G Fritzsche Bros.

Chemicals, Agricultural.....16 p. multigraphed Bulletin on Lindane tells all about its physical and chemical properties, provides formulations, outlines uses, and presents numerous application recommendations.
128H Diamond Alkali Co.

Chemicals, Agricultural.....8 p. multigraphed bulletin is a selected collection of the more important, representative terms generally associated with Diamond agricultural chemicals and their applications.
128I Diamond Alkali Co.

Chemicals, Aluminum.....Offers a growing family of superior quality aluminum chemicals. Includes information on calcined alumina, activated alumina, alumina trihydrate, aluminum dross, aluminum powders, etc.
128J Reynolds Metals Co.

Chemicals, Aromatic & Aliphatic..... Catalog describes aliphatic & aromatic chemicals . . . as well as cellulose products & inorganic chemicals. Includes photographic illustrations & detailed tabular material.
128K Eastman Chem. Products.

Chemicals, Barium.....If you are working with lube-oil additives, company would like to furnish you with a copy of their 24 p. product reference containing complete information on Westvaco Barium Chemicals.
128L Wesvaco Mineral Products.

Chemicals, Biological.....New, 24 p. Specification & Price Catalog for rare sugars & other biological chemicals. Includes sugar derivatives, amino acids, etc., now available in bulk & laboratory quantities.
128M Pfanstiehl Labs.

Chemicals, Chromium.....Spiral-bound, 36 p. Handbook covers general use & applications of Diamond bichromate of soda, chromic acid, sodium chromate & bichromate of potash in more than 17 different industries.
128N Diamond Alkali Co.

Chemicals, Chromium.....16 p. booklet, "Analytical Methods for Chromium Chemicals," contains the methods commonly employed for the analysis of the industrially important chromium chemicals. Request Serial 51.
128O Mutual Chem. Co. of America.

Chemicals, Custom-Made.....More than 1,000 high purity chemicals are manufactured by B & A. Available in quantities ranging from small bottle lots of laboratory reagents to carloads of fine chemicals. Catalog.
128P Baker & Adamson.

Chemicals, Fatty.....44 p. Catalog contains all standard ADM Fatty Chemicals: hydrogenated glycerides; hydrogenated fatty acids; saturated & unsaturated fatty alcohols; sperm oils; & sperm oil products.
128Q Archer-Daniels-Midland Co.

Chemicals, Fatty.....Issues brochure containing revised, up-to-date specifications of entire product line. Included are: steric acids, oleic acids, hydrogenated fatty acids & glycerides, plasticizers, etc.
128R Emery Industries.

Chemicals, Fine.....Announces the new 1956 Products Book...a 266 p. illustrated guide to services, products and special facilities of the foremost producer of fine chemicals and laboratory reagents.
128S Baker & Adamson Products.

Chemicals, Fine-Industrial.....12 p. Price Schedule covers Baker fine & industrial chemicals. Includes: acetic acid, acetophenetidin, barium hydroxide, calcium bromide, calcium chloride, nitric acid, etc.
128T J. T. Baker Chem. Co.

Chemicals, Furfural.....Product reference contains general information about company's line of QO chemicals. Covers data on furfural, furfuryl alcohol, tetrahydrofurfuryl alcohol, etc. Bulletin 201-A.
128U Quaker Oats Co.

Chemicals, Gas-Treating.....Maximize purity of your gas stream & minimize corrosion problems by using: monoethanolamine, diethanolamine, diethylene glycol, triethylene glycol. Request data and samples.
128V Nitrogen Div., AC&D.

Chemicals, Industrial.....24 p. booklet alphabetically lists the numerous chemicals available. Tells the story about Harshaw's growth since its beginning in 1897. Includes pictures of plants, warehouses, etc.
128W Harshaw Chem. Co.

Chemicals, Industrial.....Company produces several widely used chemical products derived from redwood bark. Reference contains data on uses, properties and characteristic behavior. Request Bulletin 4-03.
128X Pacific Lumber Co.

Chemicals, Laboratory.....New Merck Laboratory Chemicals Catalog lists the more than 1,000 laboratory chemicals currently supplied by the company, including new solvents designed for spectrophotometric use.
128Y Merck & Co.

Chemicals, Laundry....."Diamond Chemicals & Services for the Laundry Industry"—insert reviews line of specialized detergents, sours & blues, outlines technical services available to laundries of all types.
129A Diamond Alkali Co.

Chemicals, Metal Finishing.....New concise descriptions of twenty series of Enthone's special products: alkaline cleaners, stripping compounds, water displacing compounds, etc. Request illustrated Form No. 16599.
129B Enthone, Inc.

Chemicals, Metal Finishing.....Chemicals of interest to metal finishers include: citric, tartaric, gluconic, & oxalic acids, & their salts. Request Technical Bulletin 61, "Chemicals for Metal Finishing."
129C Chas. Pfizer & Co.

Chemicals, Molybdenum.....Molybdenum compounds are widely used in production of catalysts, phosphomolybdic-phosphotungstic lake colors, molybdate chrome orange pigments, etc. Technical data, samples, prices.
129D J. T. Baker Chem. Co.

Chemicals, Molybdenum.....Comprising 7 different papers, newly published survey details molybdenum's wide use in diverse chemical fields, and points to new industrial applications. 32 p. Reference No. Ch-15.
129E Climax Molybdenum Co.

Chemicals, Molybdenum.....Company anounces the availability of an informative reprint covering their product line . . . a commodity review on production and uses of molybdenum chemicals. Bulletin No. Ch-7.
129F Climax Molybdenum Co.

Chemicals, Odor Control.....Issues a new Bulletin on the use of "Alamask" odor control chemicals in rendering operations. Describes use in cookers processing butcher & slaughter house scrap & chicken offal, etc.
129G Rhodia, Inc.

Chemicals, Organic.....Company publishes an "Organic Chemical Catalogue," one of a series of brochures describing Antara's products. Chemicals listed are produced in commercial or semi-works quantities.
129H General Aniline & Film Corp.

Chemicals, Organic....."More Tales from the Alembic" is a new booklet of "calm musings" about some of the 3,500 organic chemicals available in limited quantities for science and industry. Illustrated, 28 p.
129I Distillation Products Ind.

Chemicals, Organic.....78 p. plastic spiral-bound brochure deals with insecticides, herbicides & industrial organic chemicals. Each product described, chemical & physical properties listed & applications given.
129J Diamond Alkali Co.

Chemicals, Oxygen, Active.....Company makes available upon request a literature reference covering line of active oxygen chemicals. Becco peroxygen compounds are listed and described. Bulletin No. 1.
127l *Becco Chem. Div.

Chemicals, Peroxygen ..... Modification methods based on the use of hydrogen peroxide, peracetic acid, and persulfates are described in detail. Also contains numerous literature references. Bulletin No. 27.
127m *Becco Chem. Div.

Chemicals, Peroxygen.....Possibilities of using peroxygen chemicals for dehusking, seed disinfection, improvement of germination & modification of gluten in wheat grain discussed in informative Bulletin No. 33.
127m *Becco Chem. Div.

Chemicals, Peroxygen ..... Bleaching with some peroxygen chemicals—reprint of a paper on bleaching rayons, cotton, and wool with hydrogen peroxide, peracetic acid & ammonium persulfate. Request Bulletin No. 52.
127o *Becco Chem. Div.

* From advertisement, this issue.

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Chemicals, Petrochemicals.....New processes and controls produce Celanese petro-chemicals to speed up manufacturing cycles, up-grade products, and cut costs. Many profit-making chemicals in new Celanese products index.
129K Celanese Corp. of America.

Chemicals, Petrochemicals.....Company sets new high standards in petrochemicals—constantly growing demand for purer petrochemicals are met by new Sun Oil petrochemical plants. Technical Bulletins.
129L Sun Oil Co.

Chemicals, Process.....Valuable letter-size Folder keeps process chemical information handy. Contains availability charts of light metal compounds, heavy metal compounds, acids, etc. & full price schedules.
129M J. T. Baker Chem. Co.

Chemicals, Radiochemicals.....Special Catalog serves as an introduction to the whole field of research with radioactive chemicals. Reference contains product listings, formulae, specific activities, etc.
129N Baker & Adamson Products.

Chemicals, Reagent.....Matheson, Coleman & Bell's new product catalog, of over 100 p., listing more than 4,000 reagent chemicals, biological stains, chemical indicators & solutions will be sent to you upon request.
129O Matheson, Coleman & Bell.

Chemicals, Sodium Silicate.....New 20 p. booklet reviews complete line of specialized sodium silicate chemicals. Includes physical properties, industrial applications, basic advantages, size & net wt. of packages, etc.
129P Diamond Alkali Co.

Chloride, Cuprous.....Used in the manufacture of acrylonitrile, vat dyestuffs, phthalocyanine pigments & special batteries. Company makes available samples, experimental quantities & data sheet.
129Q Baker & Adamson.

Chlorine.....Offers valuable technical bulletins: #7-"Liquid Chlorine"; #8-"Alkalies & Chlorine in Treatment of Municipal & Industrial Water"; #11-"Water Analysis"; #14-"Chlorine Bleach Solutions."
129R Solvay Process Div.

Chlorine Compounds, Organic.....Illustrated, 48 p. discusses applications of 18 products, their solvent properties, & their proper handling & storage. Numerous charts show physical property data. Book F-4769.
129S Carbide & Carbon Chem.

Chlorine, Liquid.....Presents new 72 p. technical and engineering service bulletin, "The Analysis of Liquid Chlorine and Bleach." Literature contains valuable data, tables, charts and indexes. Bulletin No. 12.
129T Solvay Process Div.

Chloromethanes.....Valuable data on diverse uses & physical & chemical properties of chloromethanes—methylene chloride, methyl chloride, chloroform, carbon tetrachloride—in new, comprehensive 28 p. reference.
129U Solvay Process Div.

Chromates.....9 p. multigraphed bulletin covers use of chromates for corrosion control in water-cooled or water-circulating equipment, such as refrigeration units, air conditioners, boilers, diesel engines, etc.
129V Diamond Alkali Co.

Chromium Nitrate, Crystal, Purified..... Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-35801.
129W Baker & Adamson.

Cleaners & Polishes.....Company makes available a detailed reference prepared to assist in the power and manual cleaning, polishing and final finishing of various fabricated metals. Request your copy of Bulletin No. 30.
129X Nu Steel Co.

Colloids.....Profusely illustrated brochure, "Colloids Out of the Sea," describes some of the interesting uses for SeaKem Colloids . . . in ice cream, puddings, chocolate milk, toothpaste, etc. 8 p.
129Y Seaplant Chem. Corp.

Crotonaldehyde.....Eastman Crotonaldehyde—denaturant . . . chemical intermediate . . . specialty solvent . . . etc. Company announces the availability upon request of descriptive information and product samples.
129Z Eastman Chem. Products.

Cryolite & Aluminum Floride.....Highest quality synthetic products. Features valuable uses-ceramics . . . insecticides . . . fluxes. Company makes available detailed information in addition to product samples.
129AA Reynolds Metals Co.

Cyanuric Chloride.....Illustrated, 48 p. describes Aero cyanauric chloride: specifications; handling & shipping; toxicity; structure; physical & chemical properties; applications; methods of analysis; bibliography.
129BB American Cyanamid Co.

Cyclohexanol.....Cyclohexanol, an intermediate and component of solvent systems in the paint, textile and dry cleaning industries is the subject of a revised Technical Data Sheet. Includes uses and typical reactions.
129CC Monsanto Chem. Co.

Cyclohexanone.....32 p. bulletin contains complete data on Nadone, an unusual solvent and chemical intermediate. Gives physical & chemical properties, uses and principal reactions. Bulletin I-19.
129DD National Aniline Div.

Defoamers.....Company makes available information on the properties and uses of twelve standard defoamers. These defoamers are sold by Hercules for use in the papermaking industry. Request information on defoamers.
129EE Hercules Powder Co.

Defoamers, Silicone....."Antifoam B" gives the ultimate in foam killing convenience. Fast acting; ready to use; ideal for continuous processing; stable. Request full particulars and free sample.
140 *Dow Corning Corp.

Detergents.....In addition to bulking properties of its spray-dried form, Sulframin AB-40 imparts high foaming properties & excellent detergency to household & industrial cleaning products. Data & product samples.
129FF Ultra Chem. Wks.

Detergents.....Now 150% active—Onyxol alkanolamides made by radically new process. Features: greater value—higher quality—more uniformity—better performance—etc. Literature and product samples on request.
129GG Onyx Oil & Chem. Co.

Detergents.....Ultrawets in your shampoo formulation may help you to improve your present product. Superior alkyl aryl sulfonates are far less costly than many other types of detergents. Offers complete information.
129HH Atlantic Refining Co.

* From advertisement, this issue.

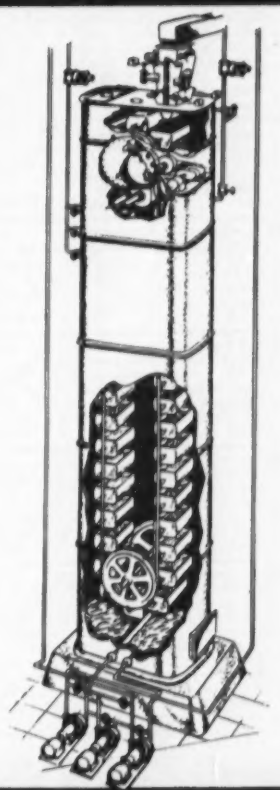
Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 71).

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TECHNICAL LITERATURE

Detergents, Non-Ionic—

Gums, Karaya

Detergents, Non-Ionic.....Wipe out foam problems with Triton CF-10. This new non-ionic detergent answers the problem of excessive foaming in cleaning compounds. Request detailed information and product samples.
130A Rohm & Haas Co.

Detergents, Non-Ionic.....Ultra Chemical is in production on Neopone LO . . . a new non-ionic detergent in spray dried bead form. It is new in formula—new in concept. Request product samples and complete data.
130B Ultra Chem. Wks.

Dialkyl Amino Alkyl Chlorides.....Specially prepared individualized intermediates—dialkyl amino alkyl chlorides provide a versatile group of intermediates for pharmaceutical synthesis. Technical information.
130C Michigan Chem. Corp.

Diamines, Fatty.....Company offers valuable information in its reference booklet, "Duomeens" on Fatty Diamines. Includes chemical properties, applications, specifications, test results, & procedures.
79e *Armour Chem. Div.

Dibromodimethyl Hydantoin.....Data on a new organic brominating agent, now available in commercial quantities. Lower in cost, more stable & more reactive than other agents. Request samples & specifications.
130D Glyco Products Co.

Dibutyl Fumarate.....You can profit by using chemically reactive dibutyl fumurate or fumaric acid to develop a new product or improve an old one. Company makes available complete information and product samples.
130E Borden Co.

Dibutyl Phthalate.....CSC's dibutyl phthalate has achieved recognition as the outstanding plasticizer for polyvinyl acetate emulsion paints. Company makes available complete data and a product sample on request.
130F Commercial Solvents Corp.

p-Dichlorobenzene.....Made in seven different sizes. Each size has its advantages—tops for repackaging & the crystals make a firm, dry, non-oozing block or pellet of exceptional whiteness. Bulletin 454.
130G Hooker Electrochem. Co.

1,4-Dichlorobutane.....Low price and availability in tank car quantities should permit commercial development of many syntheses formerly considered too expensive to be practical. For details, see Technical Bulletin.
130H E. I. du Pont de Nemours.

Diethyl Malonate.....Dow diethyl malonate, for years a valuable intermediate in the manufacture of barbituates, is finding many other uses in research and production. Request complete data and an evaluation sample.
130I Dow Chem. Co.

2,6-Diethylaniline.....This promising o-Alkylaniline is suggested as a raw material for dyestuffs, pesticides, antioxidants and other organic products. Makes available product samples and Fact Sheets on request.
130J Ethyl Corp.

Dihydropyran.....Reactivity of the double bond makes possible a wide variety of addition compounds. Hydrogenation yields tetrahydropyran, an excellent solvent & chemical intermediate. Request Bulletin No. 18.
130K E. I. du Pont de Nemours.

Diisocyanates, Aromatic.....New plant nearing completion at Moundsville, W. Va. will help polyurethans to achieve their destiny as "America's next great synthetic". "Product-data package" of Bulletins.
130L National Aniline Div.

Di-Iso Decyl Phthalate.....Recently developed phthalate plasticizer enables you to substantially increase life of your vinyl products—at a volume cost less than that of dioctyl phthalate. Technical literature & samples.
130M Ohio-Apex Div.

Di-Iso-Octyl Phthalate.....A high boiling stable liquid of low viscosity which has excellent resistance to ultra violet light. Performance data of DIOP in PVC, properties, etc. in Technical Service Bulletin E-7
130N Witco Chem. Co.

Di(oxo)decylPhthalate.....Covers general characteristics & properties of "Flexol" plasticizer 10-10 a distilled phthalate ester which is a primary plasticizer for vinyl chloride resins. Ref. F-8948-A.
130O Carbide & Carbon Chem.

Diisocyanates.....24 p. includes generic properties, data on 27 basic reactions common to all diisocyanates, 8 p. of suggested uses & a list of 122 literature references. Request Technical Bulletin No. 1-17.
130P National Aniline Div.

Diluents.....Company announces the release of a fully illustrated, 8 p. reference describing their line of diluents, dispersing agents and stickers . . . for agricultural dusts and sprays. Request Bulletin No. 23.
130Q R. T. Vanderbilt Co.

Dimers, Alkyiketens.....Illustrated bulletin describes Aquapel . . . trade name for a family of alkyiketene dimers. Gives properties, application and describes properties of paper sized with Aquapel. Request details.
130R Hercules Powder Co.

Dimethyl Sulfoxide.....Potential uses include: desulfurization & separation of petroleum fractions by selective solvent action; paint removal; solvent for acetylene & other gases; etc. DMSO Technical Bulletin.
130S Stepan Chem. Co.

Dioctyl Phthalate.....A truly high quality dioctyl phthalate whose combination of low color, low odor, low acidity, high heat stability & high ester content is unsurpassed. Specifications & sample quantities.
130T Eastman Chem. Products.

Dispersants.....Describes Marasperse—the low cost, highly effective dispersant. Completely soluble in water; non hygroscopic, non-fermenting, non-caking, free-flowing powder. Information in File No. W-130.
130U Marathon Corp.

Dispersants.....Sulfonates of low-cost, plentiful pine wood lignin disperse pigments, dyes, insecticides; stabilize fire foams; reduce boiler scale; etc. Request samples and Technical Bulletin No. 201.
130V West Va. Pulp & Paper Co.

Dispersing Agents.....Describes line of Darvan dispersing agents: properties; what they do; how they work; which should be used; how much should be used; how should they be used; etc. Request Bulletin No. 13.
130W R. T. Vanderbilt Co.

Dispersing Agents.....Make use of Daxads whenever a dispersion of insoluble, finely-divided particles suspended in water is specifically required. For complete information on product line, request Bulletin D-5.
130X Dewey & Almy Chem. Co.

Dispersions, Calcium Stearate.....Describes a new chemical product which improves processing properties & characteristics of coating formulations for machine coated papers. Technical Service Bulletin M-15.
130Y Witco Chem. Co.

Dispersions, Colloidal.....Numerous applications of "dag" colloidal dispersions and their value to marketers of petroleum products and other fluid lubricants are presented in a new illustrated Bulletin, No. 424.
130Z Acheson Colloids Co.

Dispersions, Fluorocarbon Polymer.....20 p. covers application techniques for Kel-F fluorocarbon polymer dispersions on metallic and non-metallic surfaces—spraying, spread coating, dip and flow coating, baking.
130AA M. W. Kellogg Co.

Dispersions, Pigment.....Company announces the release of a new Technical Bulletin describing and displaying their new line of Accosperse pigment dispersions for latex paint. Properties are covered in full detail.
130BB American Cyanamid Co.

Dispersions, Resin.....Widespread use of "Dresinol" resin dispersions in conjunction with GR-S type latex in a variety of applications is described in new technical booklet. Copies are available on request.
130CC Hercules Powder Co.

Dodecene Oxide.....New bulletin gives structure, typical properties and chemical reactivity of dodecene oxide. Lists a number of suggested uses as intermediate, solvent and specialty chemical. Bulletin No. 73.
127p *Becco Chem. Div.

Dust Concentrate, Pyronyl.....Company offers a new "Prentox Information Bulletin" containing a suggested label outline for Prentox Pyronyl Dust Concentrate in combination with Rotenone & fungicides.
130DD Prentiss Drug & Chem. Co.

Elastomers.....Kel-F Elastomer is a fluorocarbon rubber developed to help solve problems of rubber application under severe operating conditions. For more information, request Booklet "Kel-F Elastomer."
130EE M. W. Kellogg Co.

Elastomers.....Neoprene and Hypalon elastomers are used in improving products and cutting maintenance and replacement costs. Company offers "Neoprene Notebook" and "Facts about Hypalon."
130FF E. I. du Pont de Nemours.

Elastomers, Synthetic.....Vyram is a remarkable synthetic elastomer which resists swelling action of both synthetic & petroleum-base hydraulic fluids & lubricants. Details in Technical Bulletin ODB-55-21.
130GG Monsanto Chem. Co.

Emulsifiers.....Describes Witco DGO, a diethylene glycol oleate (diglycololeate) for emulsifying latex & resin emulsion paint systems. Outlines detailed typical properties. Technical Service Bulletin H-3.
130HH Witco Chem. Co.

Emulsifying & Anti-Foaming Agents.....Applications in paint, cosmetics, metal working, plastics, textile, etc., industries for Witco DGL (a diethylene glycol mono laurate). Technical Service Bulletin No. H-2.
130II Witco Chem. Co.

Emulsions, Cosmetic.....Valuable article, "Cosmetic Emulsions in Polyethylene Containers," contains useful information on the selection of materials and methods to test products that you're packaging this way.
130JJ Atlas Powder Co.

Emulsions & Detergents.....Illustrated, 96 p. features valuable sections on: emulsification; surface active chemicals; oil and solvent emulsions; "soluble" oils and solvents; detergents; etc. Book F-4186D.
130KK Carbide & Carbon Chem.

Emulsions, Silicone.....Bulletin covering HSC #362 Silicone Emulsion. Well suited to mold release applications where maximum stability and release performance are desired. Request Bulletin No. 11-118-0-2-56.
130LL Harwick Standard Chem. Co.

Emulsions, Vinyl Acetate Copolymer.....For coatings, textile sizes, adhesives & water-base paints. Everflex emulsions produce films that are marked by flexibility & softness. Technical Bulletin E-9.
130MM Dewey & Almy Chem. Co.

Epichlorhydrin.....New technical information bulletin includes: physical properties; applications; typical reactions; physiological properties; numerous references; etc. Request copy of Bulletin No. F-8862.
131A Carbide & Carbon Chem.

Epoxidation with H_2O_2.....Literature and data on epoxidation technique for natural fats, oils and derivatives. New method increases epoxy content; lowers by-product formation; eliminates preforming peracid; etc.
131B E. I. du Pont de Nemours.

Epoxidation-Hydroxylation Reactions..... Epoxidation-hydroxylation reactions with hydrogen peroxide & peracetic acid. General review gives typical procedures & suggested applications, Bulletin No. 16.
131C Becco Chem. Div.

Epoxidation - Hydroxylation Reactions.....Makes available a reprint of an article which discusses epoxidation reactions and the importance of the reaction products for the plastics industry. Request Bulletin 58.
127q *Becco Chem. Div.

Epsilon Caprolactam.....Contains 10 p. of fundamental data on Epsilon Caprolactam. Covers complete chemical and physical properties, basic reactivity and suggested uses. Technical Bulletin No. 1-14.
131D National Aniline Div.

Esters, Acrylic.....Contains technical information on line of acrylic esters (ethylacrylate, n-butyl acrylate, 2-ethylbutyl acrylate, 2-ethylhexyl acrylate)—properties, reactions, containers, etc. Ref. F-7434.
131E Carbide & Carbon Chem.

Esters, Cellulose.....If you need a film to protect . . . to decorate . . . to seal . . . to cushion . . . to mask—investigate the cellulose esters made by Eastman. Offers complete property information.
131F Eastman Chem. Products.

Esters of Parahydroxybenzoic Acid..... If your product is subject to mold and bacterial attack, it will pay you to investigate the Parasepts as preservatives. Request Bul. PSPT-1 & Tech. Info.
131G Heyden Chem. Corp.

Ethanolamines.....40 p. Technical Bulletin includes: shipping information; sales specifications; analytical procedure; physical properties; chemical properties; industrial uses; handling & storage; toxicity; etc.
131H Jefferson Chem. Co.

Ethanolamines.....Company makes available samples, quotations and literature on Ethanolamies. Includes information on its uses, physical properties tables & graphs, etc. Complete details sent upon request.
131I Nitrogen Div. AC&D.

Ether Anhydrous AR..... Perfectly clear, colorless liquid; clean characteristic odor of ethyl ether, free from foreign odor. Purest diethyl ether commercially available. Details in Technical Information Sheet.
131J Mallinckrodt Chem. Wks.

Ethers & Oxides.....64 p. reference discusses applications of 32 products including ethylene oxide & propylene oxide. Gives data on physical properties, solubilities, shipping, specifications, etc. Ref. No. F-4764.
131K Carbide & Carbon Chem.

Ethyl Bromide.....When combined with another intermediate, ethyl bromide can result in a higher yield of finished product with overall lower costs and higher production. Catalog describes full line of pure bromides.
131L Michigan Chem. Corp.

Ethylene Glycol Diacetate.....An ester solvent with a challenging potential—slow evaporating rate, high boiling point, high flash point, colorless, pleasant odor, etc. Information, samples, technical data, etc.
131M Celanese Corp. of America

Ethylene Oxide.....Prepare non-ionic detergents by using high purity Nitrogen Div. ethylene oxide. For data and a bibliography of literature request "The Manufacture of Non-Ionic Detergents from Ethylene Oxide."
131N Nitrogen Div. AC&D.

Ethylene Polymer.....Illustrated Folder describes Marlex 50—typical characteristics, typical properties (typical electrical properties, film properties, permeability properties), numerous applications, etc.
131O Phillips Chem. Co.

Fatty Derivatives, Ethoxylated.....Company offers a valuable reference booklet entitled "Etho-Chemicals" describing ethoxylated fatty derivatives. Includes chemical properties, specifications, applications, etc.
79e *Armour Chem. Div.

Ferric Nitrate, Crystal, Technical..... Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-37441.
131P Baker & Adamson.

Finishes, Paint.....The versatility and wide application of Nubelite, a custom-formulated industrial paint finish for use on any metal product, is highlighted in a new comprehensive, fully illustrated 20 p. Brochure.
131Q Glidden Co.

Flatting Agents.....Covers Acrawax C Powdered, a fairly hard moisture resistant wax which gives additional advantages by acting as a slip agent & by improving wear & moisture resistance. Includes samples.
131R Glyco Products Co.

Flatting Agents.....Announces the availability of a Technical Bulletin on the use of company's Syloid 244 product for flatting vinyl lacquers, to give a low-gloss effect. Extensive tests are reported in detail.
131S Davison Chem. Co.

Flavors.....Illustrated, 24 p. describes Fritzsche flavors for every purpose. Includes: genuine fruit extracts concentrated; fruit flavors with other natural flavors; Fritzbro fruitbases imitation; oleoresins; etc.
131T Fritzsche Bros.

Fluids & Lubricants, Synthetic.....Issues a new 52 p. booklet on Ucon synthetic fluids & lubricants. Covers properties, applications, and characteristics of these polyalkylene-glycol derivatives. Request Form No. F-6500D.
131U Carbide & Carbon Chem.

Formaldehyde.....U. F. Concentrate-85 is highest concentration of liquid formaldehyde commercially available . . . 59% formaldehyde and 26% urea in a water solution. Request samples and valuable Folder.
131V Nitrogen Div. AC&D.

Formaldehyde.....Because of its high order of chemical reactivity & low cost, formaldehyde is one of the most important basic organic chemicals in current industrial use. Properties & uses in Bulletin No. S-01-4.
131W Celanese Corp. of America.

Formaldehyde.....High purity 50% and 37% formaldehyde is available at low cost from Du Pont. Its methylene —CH_2— group functions as a "chemical button" to link similar or dissimilar molecules. Request data.
131X E. I. du Pont de Nemours.

Fullers Earth.....Covers thickening & gelling of organic & aqueous systems with Permagel—a purified, grit-free colloidal Attapulgite which imparts outstanding thixotrophy & heat stability. Bulletin No. SD-30.
131Y Minerals & Chem. Corp.

Furan.....The chief interest in furan has centered on its use as an intermediate in the production of pharmaceuticals and plant growth regulants. Technical Bulletins on properties and applications available.
131Z E. I. du Pont de Nemours.

Furfural.....Rely on furfural for performance. . . uniform purity . . . low cost . . . unfailing availability. Offers technical literature covering its unusual properties and numerous uses Request Bulletin No. 204.
131AA Quaker Oats Co.

Furfural.....16 p. devoted to physical data on QO brand, including recovery of furfural from various systems, vapor pressure graph & temperature-composition diagram of furfural-water. Bulletin 203-A.
131BB Quaker Oats Co.

Gas, Liquefied Petroleum.....Illustrated 8 p. brochure, "LP-Gas, the Cinderella Fuel," offers a non-technical explanation of the history, characteristics, production, use & transportation of LP-Gas.
131CC Gulf Oil Corp.

Gelling Agents.....(For oil well treating). Specially compounded salts (soaps) of fatty acids which have the ability to gel petroleum hydrocarbon solvents at room temperature. Technical Service Report No. G-4.
131DD Witco Chem. Co.

Glutaraldehyde.....Glutaraldehyde, a highly reactive derivative of acrolein, is supplied as a stable aqueous solution having a mild odor and a light color. Literature includes physical properties. No. F-40005.
131EE Carbide & Carbon Chem.

Glycerine.....Dow Chemical will soon be on stream with commercial production of synthetic glycerine. Request an experimental sample from Dow, and evaluate the material and the quality in your own laboratory.
131FF Dow Chem. Co.

Glycerine.....Offers valuable booklets including: "Glycerine Alkyds Tailored to Need" (20 p.); reference on glycerine standards & specifications (8 p.); booklet covering properties & applications (16 p.).
131GG Glycerine Producers' Assoc.

Glyceryl Monostearate.....Aldo glyceryl monostearate features numerous applications—baking, ice cream, margarine, candy, other foods, and cosmetics. Request Glyco Catalog on this versatile product.
131HH Glyco Products Co.

Glycols.....Produce ethylene, diethylene and triethylene glycol of the highest commercial purity. Actual shipping analyses show material is low in iron, chlorides, acidity and water. Request samples & details.
131II Nitrogen Div., AC&D.

Greases, Lithium Base.....Describes in detail Molykote, Type BR2, a general purpose grease with extreme bearing pressure properties. Include 10 outstanding qualities, physical specifications, etc. Bulletin No. 101.
131JJ Alpha Molykote Corp.

Gum, Arabic.....Many uses: in textiles, confectionery, pharmaceuticals, lithography, matches, adhesives. Foam stabilizer in brewing. In whole, granular & powder form or in purified syrup form. See Bulletin.
131KK Jacques Wolf & Co.

Gum, Karaya.....A thickener in printing, finishing and sizing. Other uses: in pharmaceuticals as an emulsifier; in ceramic clays, candy and ice cream as a binder. Available in natural or powder form. Special Bulletin.
131LL Jacques Wolf & Co.

* From advertisement, this issue.

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Chemicals & Raw Materials

TECHNICAL LITERATURE

Gums—

Lithium Borohydride

Gums.....Data on newly available base-polymers for silicone rubber stocks. Silastic, 401 & 440 Gums offer greatly reduced compounding time & increased temperature stability of compounded stocks. Reference No. 1-204.
132A Dow Corning Corp.

Gums, Water-Soluble.....The fascinating story of the history, characteristics, and uses of famous gums—arabic, trabacanth, karaya, irish moss, locust bean—is presented in "The Story of Water Soluble Gums."
132B Jacques Wolf & Co.

Hexamethylenetetramine.....New bulletin reporting on properties & uses of this cyclic derivative of formaldehyde & ammonia. Especially useful in the synthetic resin industry. Request "Hexamethylenetetramine" bulletin.
132C Heyden Chem. Corp.

Hexylene Glycol.....Technical information on hexylene glycol, a colorless, low-freezing glycol with unusual solvent & wetting properties. Includes physical properties & applications. Reference F-7114B.
132D Carbide & Carbon Chem.

Hydrocarbon, Hard.....Illustrated 56 p. reference, "Witco Hard Hydrocarbon M.R. #38) in Natural and Chemical Rubbers," includes information on properties, mixing and testing procedures. Bulletin No. 51-1.
132E Witco Chem. Co.

Hydrogen Peroxide.....Descriptive reference contains general information on properties, reactions and uses of hydrogen peroxide solutions of 27.5% to 50% concentration. Request Product Bulletin No. 2.
127r *Becco Chem. Div.

Hydrogen Peroxide.....Announces release of a valuable literature reference—an article reprint on formation, manufacture, properties & uses of hydrogen peroxide & other peroxides. Request Bulletin No. 2A.
127s *Becco Chem. Div.

Hydrogen Peroxide.....Article reprint summarizes the physical properties of 90% hydrogen peroxide. Also contains detailed information on specific uses and on handling 90% H_2O_2. Bulletin No. 3.
127t *Becco Chem. Div.

Hydrogen Peroxide.....''Method of Measuring H_2O_2 Concentration in More Concentrated Solutions" gives directions for permanganate titration in analyzing H_2O_2 solutions. Request Bulletin No. 23.
127u *Becco Chem. Div.

Hydrogen Peroxide.....''Purification of Metal Salt Solutions with Hydrogen Peroxide"—a review of the use of hydrogen peroxide for removal of iron from various chemical process solutions. Bulletin No. 26.
127v *Becco Chem. Div.

* From advertisement, this issue.

Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 71).

Hydrogen Peroxide.....Hydrogen peroxide dry-in process for bleaching wool—describes wool bleaching process, its effect on dyeing properties of wool & a method for improved acid dyeing of bleached wool. Bulletin No. 29.
127w *Becco Chem. Div.

Hydrogen Peroxide.....Preparation of alkali cellulose & of viscose described & effects of hydrogen peroxide added to promote aging of alkali cellulose & ripening of viscose discussed. Request Bulletin No. 30.
132F Becco Chem. Div.

Hydrogen Peroxide.....Hydrogen peroxide bleaching of chemical & mechanical pulps. New developments & process applications covered on basis of commercial & experimental data. Tables, graphs, flow sheets. Bulletin 32.
127x *Becco Chem. Div.

Hydrogen Peroxide.....Article reprint includes a detailed discussion of pumps, containers, piping and valves, etc. . . . for handling high strength hydrogen peroxide. Request copy of Bulletin No. 40.
127y *Becco Chem. Div.

Hydrogen Peroxide.....Product literature describes Becco hydrogen peroxide 35% Formula F—a grade of hydrogen peroxide designed for use in food processing. Covers properties & specifications. Bulletin No. 41.
127z *Becco Chem. Div.

Hydrogen Peroxide.....Offers a detailed description of properties & uses of Formula D—a grade of hydrogen peroxide designed for the preparation & bottling of dilute hydrogen peroxide solutions. Bulletin 42.
127aa *Becco Chem. Div.

Hydrogen Peroxide.....Furnishes a general outline of properties and behavior of hydrogen peroxide solutions of over 50% concentration. Contains information on handling, construction materials, etc. Bulletin No. 46.
127bb *Becco Chem. Div.

Hydrogen Peroxide.....High density pulp bleaching processes—describes use of hydrogen peroxide in steep bleaching, continuous tower bleaching, dryer bleaching, etc., as applicable to various pulps. Bulletin 48.
127cc *Becco Chem. Div.

Hydrogen Peroxide.....New 24 pg. book on hydrogen peroxide contains sections on physical properties, chemical reactions, uses, containers, handling and storage. For complete details, request your copy.
132G Solvay Process Div.

Hydrogen Peroxide.....Supplies valuable article reprint, "History of the Hydrogen Peroxide Industry" . . . a review of the manufacture and use of hydrogen peroxide. Request your copy of Bulletin No. 50.
127dd *Becco Chem. Div.

Hydrogen Peroxide.....''Self-Heating of Hydrogen Peroxide Storage Vessels"—a discussion of H_2O_2 storage and storage containers and recommended procedure for H_2O_2 storage. Request copy of Bulletin No. 54.
127ee *Becco Chem. Div.

Hydrogen Peroxide.....''Stability of Pure Hydrogen Peroxide" discusses effects of purity, stabilizers, acid concentration & other factors on stability of high strength hydrogen peroxide. Bulletin No. 55.
127ff *Becco Chem. Div.

Hydrogen Peroxide.....''Albone", an aqueous hydrogen peroxide solution, is available in grades containing 35% and 50% by weight H_2O_2. Descriptive literature contains information on properties and applications.
132H E. I. du Pont de Nemours.

Hydrogen Peroxide Solutions.....The analysis of hydrogen peroxide solutions—a critical summary of the most useful methods for analysis of hydrogen peroxide solutions at all concentrations. Request Bulletin No. 59.
127gg *Becco Chem. Div.

Hydrogen Peroxide Vapor.....20 p. booklet covers: properties of hydrogen peroxide vapor; decomposition of hydrogen peroxide vapor; generation of hydrogen peroxide vapor; uses; etc. Request Bulletin No. 62.
127hh *Becco Chem. Div.

Hydroxyethyl Cellulose.....Bulletin gives physical properties, net container contents, description & preparation of cellosize solutions. Also gives properties & uses of cellosize films. Bul. F-8544B.
132I Carbide & Carbon Chem.

N-(2-Hydroxypropyl) Ethylenediamine.....Monolene, new "water white" liquid of interest to those concerned with reactions involving primary & secondary amine groups, as well as secondary hydroxyl groups. Data & sample.
132J Wyandotte Chem. Corp.

12-Hydroxystearin.....Describes Castorwax 12-Hydroxystearin . . . the low cost synthetic wax with valuable plus-features. Includes details of the many uses of Castorwax and formulation information. Technical Bulletin 7.
132K Baker Caster Oil Co.

Inks, Vinyl.....The R. P. Series of Vinyl Inks are solutions of especially compounded vinyl compounds, containing vinyl copolymer resins, fillers and colors. For further information, request Bulletin No. 02-69-1-1-56.
132L Harwick Standard Chem. Co.

Inositol.....Long recognized as a member of the Vitamin-B complex & an important lipotropic agent, it has been included in the new edition of the National Formulary. Abstracts cover the recent literature.
132M Corn Products Refining Co.

Iron Oxides, Red.....Reds—more of them . . . and better made. Included are pure red iron oxides—red iron oxides—ventian reds. For complete information on company's line, request descriptive literature.
132N C. K. Williams & Co.

Isophorone.....Describes physical properties, specifications, shipping data, general solvent properties, constant-boiling mixtures, physiological properties and uses in a new reference. Technical Bulletin No. F-5897A.
132O Carbide & Carbon Chem.

Isopropyl Ether.....New reference discusses use for isopropyl ether and contains up-to-date information on physical and physiological properties, specifications, solubility and shipping. Technical Bulletin No. F-40003.
132P Carbide & Carbon Chem.

Kentones, Aliphatic.....Stearone & Laurone are symmetrical higher molecular weight aliphatic ketones derived from their corresponding fatty acids. Data on compatibility, solubility, toxicity, properties, etc. Bulletin G-1.
132Q Armour Chem. Div.

Lacquers for Plastics.....''A Report on Lacquers for Plastics" describes lacquer formulations which give good performance on some difficult-to-coat plastics. Company makes copies available upon request.
132R Hercules Powder Co.

Lanosterol.....Lanosterol is a fatty, alcoholic component of Lanolin and forms the greater part of the methanol insoluble matter of wool wax alcohols. Request data on Lanster brand pure lanosterol.
132S Croda, Ltd.

Latex.....WC-130 is designed as a high quality vehicle for interior wall sealers & coatings to provide superior color, toughness, & resistance to alkalis & cleaning compounds. Request Bulletins 1 & 225.
132T Bakelite Co.

Latices.....Presents a new 16 p. reference on use of Hycar latices in textiles. Features a chart showing the physical properties of Hycar latices & typical fields of application for each. Request Service Bulletin H-20.
132U B. F. Goodrich Chem. Co.

1956 INVENTORY

Latices, Concentrated . . . . . Revertex brand presents natural rubber in its most versatile form. Outlines properties of concentrates & lists manufacturing processes in which they are commonly used in illustrated, 32 p.
133A Reveretex Ltd.

Latices, Nitrile.....Describes Chemigum Latices 236 & 246—small particle size nitrile latices. Sections include: analysis of properties; why small particles; small particle colloid stability; etc. Ref. No. 55-189.
133B Goodyear Tire & Rubber Co.

Latices, Resin & Plastic.....Geon resin & plastic latices are being used today in textile & fabric, paper, electrical, leather & paint industries. Summarizes properties & applications in illustrated Bulletin No. L-4.
133C B. F. Goodrich Chem. Co.

Lead Nitrate, Crystal, Technical..... Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-38371.
133D Baker & Adamson.

Leveling Agents.....Provides data on Levelon—a new, effective leveling agent. Levelon aids in producing smooth, even & clear films & also has added property of imparting & improving gloss of all films.
133E Abco Chem. Co.

Levulose CP.....Levulose (fructose) is the sweetest of the sugars. It is used in intravenous feedings because of rapid absorption and lack of insulin demand. Announces availability of a Bibliography on request.
133F Pfanstiehl Labs.

Lignin.....Gives comparative properties of semi-hard rubber compounds made with Polypol S-70 (coprecipitate of lignin & a butadiene-styrene copolymer) versus the 1500 type GR-S copolymer. Technical Bulletin 203.
133G West Va. Pulp & Paper Co.

Lithium ..... Interesting report, "Life with Lithium" presented in view of spectacular rise of lithium from an obscure chemical element to a multi-million dollar business in the space of half a dozen years. 24 p.
115 *Foote Mineral Co.

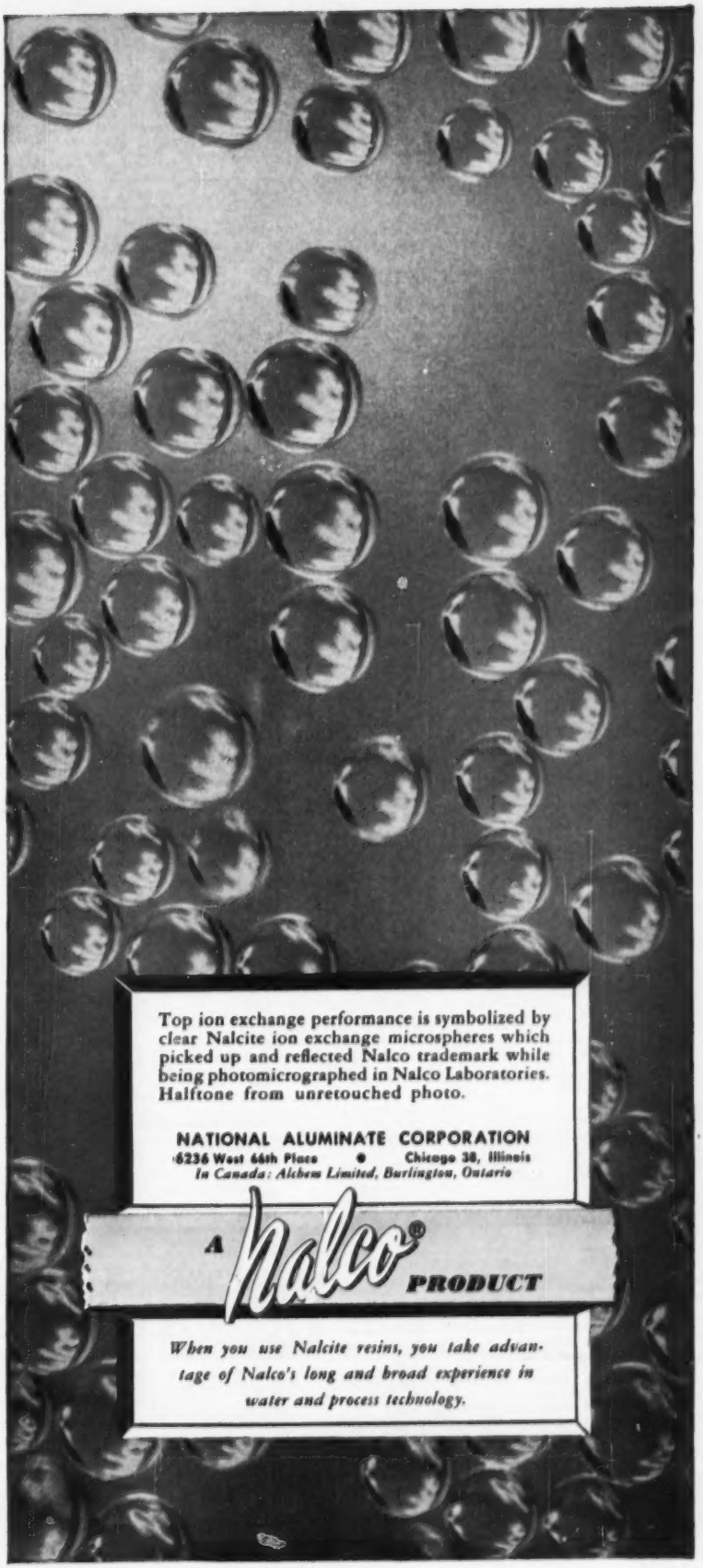
Lithium.....Lithium in nuclear energy has been the subject of technical study by the staff of the Lithium Corp. Lithium metal, 2 metal derivatives, & 15 salts are available for study. Request data sheets.
133H Lithium Corp. of America.

Lithium Aluminum Hydride.....A specific agent for numerous organic reductions. Reference gives composition, properties, solubility, applications, typical reductions, handling, safety & storage data. Bul. 401-D.
133I Metal Hydrides.

Lithium Amide.....Molecular weight—22.964; color and form—white crystaline; density—1.178 g./cc. at 17.5°C.; melting range—330-400°C.; etc. Makes available a Data Sheet providing complete information.
133J Lithium Corp. of America.

Lithium Borohydride.....Offers technical information on lithium borohydride. Features valuable uses: organic reducing agent; hydrogenation agent; hydrogen generation; etc. Find complete details in Bulletin 402.
133K Metal Hydrides.

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TECHNICAL LITERATURE

Lithium Carbonate—

Oils, Perfume

Lithium Carbonate....Product has had its greatest use in the ceramic and chemical manufacturing fields. Announces the availability of a Data Sheet describing density, solubility, typical analysis, uses, etc.
134A Lithium Corp. of America.

Lithium Carbonate.....Issues a Technical Bulletin on lithium carbonate. In reference is detailed information on chemical analysis, solubility in water at various temperatures, suggested uses & other material.
134B American Potash & Chem.

Lithium Chloride.....Data Sheet covers; molecular weight; color & form; density; melting & boiling points; solubility; density of aqueous solutions; typical analysis; grades & strengths; packing; uses; etc.
134C Lithium Corp. of America.

Lithium Hydride.....Data Sheet offers information covering color and form, density dissociation pressure, solubility, chemical behavior, applications, availability, purity, handling and storage, etc.
134D Lithium Corp. of America.

Lithium Hydroxide.....Data Sheet covers its uses; storage batteries; gas absorption; pharmaceutical chemicals; multi-purpose greases; lubricating oils & lithium salts. Technical Data Sheet available upon request.
134E Lithium Corp. of America.

Lithium Hydroxide.....Presents an informational Bulletin on "Trona" lithium hydroxide. Pamphlet provides valuable data on potential uses, results of laboratory tests on lithium base greases and other material.
134F American Potash & Chem.

Lithium Metal.....Lithium has been used for many years in metallurgy as a degasifier, deoxidizer, desulfurizer and general purifying agent. Data Sheet covers chemical behavior, applications, purity, etc.
134G Lithium Corp. of America.

Lithium Titanate.....Uses—ceramics: (enamels)—as a mill addition in titanium-bearing enamels for effecting lower burning; (glazes)—used as a mill addition in vitreous & semi-vitreous glazes; etc. Data Sheet.
134H Lithium Corp. of America.

Lubricants.....Fluorolubes, polymers of trifluorovinyl chloride, won't break down in the presence of oxygen, hydrogen peroxide or other reactive chemicals. Won't be injured by heat. Request complete data.
134I Hooker Electrochem. Co.

Lubricants, Molybdenum Disulfide..... Lists 17 types & tells of the importance of this compound in extreme bearing pressure, & high, low & normal temperature lubrication applications. Bulletin No. 103A.
134J Alpha Molykote Corp.

Lubricants, Open Gear.....Covers Molykote 165X . . . an open gear lubricant for application on highly loaded gears which normally can only be lubricated infrequently. Request illustrated Bulletin No. 105.
134K Alpha Molykote Corp.

Lubricants, Silicone.....Cut your valve maintenance with Dow Corning valve seal, the non-melting, chemical-resistant silicone lubricant. Effective at temperatures from —40° to 500° F. Sample available upon request.
134L Dow Corning Corp.

Lubricants, Silicone Mold.....Releases a comprehensive study of silicone mold lubricants for the rubber industry. Properties & performance of leading release agents discussed, application methods described, etc. 8 p.
134M Dow Corning Corp.

Lubricants, Synthetic Wax.....Acrawax C is an organic product which fires-off completely, leaving no residue. Can be readily incorporated in a wide range of powdered products. Samples & catalog, "Synthetic Waxes."
134N Glyco Products Co.

Magnesias.....Company makes available their latest magnesia bulletin entitled, "Chemical Magnesias and Magnesite—Technical and U.S.P. Grades." Includes data on specifications, uses and applications. 8 p.
134O Harwick Standard Chem. Co.

Magnesium, Aluminum Silicate, Colloidal.....Literature includes: physical properties; chemical analysis; preparation, viscosity, and properties of Veegum water dispersions; applications; etc. Bulletin 122.
134P R. T. Vanderbilt Co.

Magnesium Stearate Purified.....A fine, white powder; odorless. Uses—a covering agent, a dry lubricant, bodying agent, gel-breaker and emulsifier. Descriptive Technical Information Sheet is available on request.
134Q Mallinckrodt Chem. Wks.

Maleic Esters.....Offers technical literature describing the physical properties, reactions, applications, availability, and net container contents of company's line of maleic esters. Reference No. F-7354.
134R Carbide & Carbon Chem.

Methanol.....Company announces the availability upon request of descriptive literature, product samples and price information on their line of methanol. Denaturing grade . . . good color and odor. Tank cars or drums.
134S Crossett Chem. Co.

Methionine Energy Concent.....Presents an illustrated 10 p. background report covering methionine-energy relationship—specific application of a new nutritional concept to achieve maximum broiler feed efficiency.
134T E. I. duPont de Nemours.

Methyl Amyl Acetate.....In lacquer & thinner formulations, methyl amyl acetate gives you efficient performance at a low cost. It improves gloss, flow-out, & blush-resistance. Offers samples & Bulletin F-6264.
134U Carbide & Carbon Chem.

Methyl Bromide.....Recommended as a fumigant for elimination of insect & rodent infestation of grain, tobacco plant beds, seeds, dried fruits, etc. Request complete information on use of Kolker methyl bromide.
134V Kolker Chem. Corp.

Methyl Chloride.....12 p. covers line of methyl chloride, methylene chloride, chloroform & muriatic acid. Each product is summarized, its specifications listed, its uses enumerated. Shipping containers are also given.
134W Diamond Alkali Co.

Methyl Isobutyl Ketone.....Includes applications, physical properties, specifications, shipping data, general solvent properties, constant-boiling mixtures & physiological properties, in Bulletin F-8637.
134X Carbide & Carbon Chem.

Methyl n-Propyl Ketone.....Covers physical properties, specifications, shipping data, solvent data on resin solubilities, performance in nitrocellulose lacquers, etc. Request Bulletin No. F-8780.
134Y Carbide & Carbon Chem.

Methyl Parathion.....New reference includes: features, registrations for use (at product characteristics & USDA & state levels), precautions for handling, formulation data. Technical Bulletin No. 0-55.
134Z Monsanto Chem. Co.

N-Methyl-2-Pyrolidone ..... Powerful organic-solvent for acrylonitrile polymers & copolymers, celluiose triacetate, etc. Selective solvent for acetylene in natural gas. Technical information & product samples.
134AA General Aniline & Film Corp.

Methylamines.....Logical intermediates in dozens of reactions. Used in rubber-vulcanization accelerators, pesticides, surface-active agents, dyestuffs, pharmaceuticals, etc. Request complete information.
134BB Rohm & Haas Co.

Minerals & Chemicals.....Separate sections of "Minerals & Chemicals Story" tell a "mine-to-finished-product" story of the firm's operations in kaolin, Attapulgite, limestone & bauxite. Request booklet.
134CC Minerals & Chem. Corp.

Molding Compounds, Fibercore.....Technical Data Folder describes new fiber-glass reinforced materials . . . of high impact strength . . . but in lightweight metal range (specific gravity approximately 1.8).
134DD Plumb Chem. Corp.

Molding Compounds, Nylon.....Presents molding characteristics & physical properties of new Plaskon nylon molding compounds 8200 & 8201 together with an analysis of the new Plaskon polyethylene lubricants. Illustrated.
134EE Barrett Div.

Molding Materials, Alkyd.....Characterized by excellent dimensional stability, electrical characteristics & moldability, alkyd materials find wide industrial use. Describes 3 types—granular, putty, glass reinforced.
134FF Barrett Div.

Molybdenum.....Announces the release of product literature, "Climax Methods of Analysis." Features analytical procedures for the determination of molybdenum and the impurities in various molybdenum compounds.
134GG Climax Molybdenum Co.

Molybdenum.....Company announces the availability of descriptive literature . . . "Reclaiming Acres with Ounces." Includes information on molybdenum in land improvement, with special reference to acid soils.
134HH Climax Molybdenum Co.

Molybdenum Boride Compounds . . . . . "Refractory Molybdenum Borides" is a 6 p. bulletin describing applications; chemical, physical and mechanical properties; and preparation of molybdenum boride compounds.
134II Climax Molybdenum Co.

Molybdenum Disilicide.....A new structural intermetallic...resists oxidation at 3000° F...resists corrosion and chemical attack...withstands stress at high temperatures. "Refractory Molybdenum Silicides."
134JJ Climax Molybdenum Co.

Molybdenum Pentachloride.....Presents detailed references, "Properties of Molybdenum Pentachloride"—a review of the more important physical and chemical properties of this compound. Bulletin No. Cdb-3.
134KK Climax Molybdenum Co.

Molybdenum Silicides . . . . . Companion publications on molybdenum silicides —Bulletin Cdb-6, entitled "Refractory Molybdenum Silicides;" Bulletin CH-23, entitled "Fabrication of Molybdenum Disilicide Parts."
134LL Climax Molybdenum Co.

Monomers.....Makes available a reference list of monomeric compounds, giving physical properties, an up-to-date expression of current production status, & plans for future availability. Ref. No. F-8498-C.
134MM Carbide & Carbon Chem.

Monomers.....Describes MG-1...a high-boiling, low viscosity monomer which is an excellent dispersant for plastisol-grade vinyl chloride resins. Covers characteristics, applications, properties, etc. Ref. F-8794.
134NN Carbide & Carbon Chem.

Monomers.....Vinyl propionate monomer clears the way for the commercial development of new emulsion paints, adhesives, laminates, etc. Available in drum lots to tankcar quantities. Samples & Bulletin.
134OO Celanese Corp. of America.

1956 INVENTORY

Monopentaerythritol.....Issues upon request a new Technical Bulletin on "Monopentek," Heyden's monopentaerythritol. Includes data on specification, properties, solubility, reactions, uses, etc. Bulletin PE 11-55.
135A Heyden Chem. Corp.

Morpholine Derivatives.....New technical bulletin on N-substituted morpholine derivatives discusses uses and potential applications, physical and physiological properties, and shipping data. Tech. Bul. F-8640.
135B Carbide & Carbon Chem.

Moss, Irish.....Used where highly soluble viscous mucilage is desired, such as cold water paint, shoe polish, leather and textile sizing. In neutral, bleached or purified powder forms. Special Bulletin.
135C Jacques Wolf & Co.

Niacinamide USP Powder.....Features valuable uses: in pharmaceutical preparations; as a specific for treatment of pellagra; to enrich various food products; etc. Complete details in Technical Information Sheet.
135D Mallinckrodt Chem. Wks.

Nitrate of Soda.....Coarse, medium or fine crystals, screened to suit your particular end, use or process—whether explosives, meat packing, ceramic, dye making, food manufacture, etc. Request product samples.
135E Nitrogen Div., ACⅅ.

Nitriles, Fatty......"Arneel" booklet gives the chemical properties, applications, specifications, test results, procedures, etc., for Fatty Nitriles. A valuable reference for many applications.
79a *Armour Chem. Div.

Nitrogen Fertilizer Solutions....."Arcadian Nitrogen Fertilizer Solutions for Direct Application" discusses and illustrates the compositions, chemical properties, and methods of using these solutions in agriculture.
135F Nitrogen Div. ACⅅ.

Nitroparaffins.....As solvents, the NP's present an unusual combination of properties. Request Technical Data Sheet for details, specifications, properties, uses, solubility tables, etc. plus product samples.
135G Commercial Solvents Corp.

Octylphenol & Nonylphenol.....16 p. literature reference describes line of octy phenol and monyl phenol; physical properties; uses; chemical reactions; and a complete bibliography. Request copy of Booklet SP-98.
135H Rohm & Haas Co.

Odorants, Gas.....30 p. Bulletin includes data on Calodorant "C" odorant, Calodorant "C" Special, Alert gas odorant, Oronite LPG odorant, etc. A comparative chart covers the chemical & physical characteristics.
135I Oronite Chem. Co.

Oils, Castor.....Catalog & Product Guide of Castor Oils & Chemical Derivatives gives uses & proposed applications for 90 castor oil products such as soaps, acids, esters. Technical information is also included.
135 *Baker Castor Oil Co.

Oils, Perfume....."Rhodia Perfume Oils for Cream Shampoos" describes a series of new perfumes created especially for cream shampoos prepared from the newest aliphatic alcohol sulfates and like products.
135J Rhodia, Inc.

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Acetyl Ricinoleate	✓	✓	✓	✓			
Hydroxystearate	✓	✓		✓	✓	✓	✓
Acetoxystearate		✓	✓				
Undecylenate	✓	✓					

METALLIC SOAPS	ALUMINUM	BARIUM	CALCIUM	CADMIUM	COPPER	LITHIUM	MAGNESIUM	POTASSIUM	COBALT	ZINC
Ricinoleate	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Undecylenate			✓	✓	✓	✓			✓	✓	✓
Hydroxystearate	✓		✓	✓			✓	✓			✓

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TECHNICAL LITERATURE

Oils, Tall—

Resins

Oils, Tall.....Seecotol whole tall oil—high quality, high in fatty acid, low in rosin acids. Tank cars or drums. Announces the availability of descriptive literature, samples and prices upon request.
136A Crossett Chem. Co.

Oils & Waxes, Fluorocarbon.....Illustrated 20 p. booklet contains detailed information on KEL-F fluorocarbon oils, waxes and greases; chemical structure; specifications; applications; properties; etc.
136B M. W. Kellogg Co.

Oils, White.....Penn-Drake white oils, petrolatums & odorless solvents are detailed in a new technical bulletin. Included are specifications and suggested applications for the various products. Bulletin No. 555.
136C Pennsylvania Refining Co.

Oxamide, Purified.....Company announces availability of an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-48651.
136D Baker & Adamson.

Oxidation Reactions.....“Oxidation Reactions with Aliphatic Peracids” discusses preparation of peracid solutions & their use in various oxidation reactions of interest in organic synthesis. Bulletin 17.
127ii *Becco Chem. Div.

Oxides, Octylene.....New bulletin gives structure, typical properties and chemical reactivity of octylene oxide. Lists a number of suggested uses as intermediate, solvent and specialty chemical. Bulletin No. 72.
127jj *Becco Chem. Div.

Oxides, Chromium.....Most stable of the green pigments, unaffected by acids, etc., non-fading. The 4 pure chromium oxides withstand ceramic temperature; the 2 hydrated used for brilliant color. Data & samples.
136E Williams Colors & Pigments.

Oxides, Olefin.....New bulletin gives structure, typical properties and chemical reactivity of C_{12}-C_{16} olefin oxide. Lists a number of suggested uses as intermediate, solvent and specialty chemical. Bulletin 74.
127kk *Becco Chem. Div.

Paraffins, Chlorinated.....“Your Fact File On Diamond Chlorowax . . .” the Versatile Chlorinated Paraffin” lists both resinous & liquid grades available & reviews & illustrates principal industrial applications. 36 p.
136F Diamond Alkali Co.

Paraffins, Chlorinated.....Booklet describes properties and uses for “Clorafin,” a chlorinated paraffin, made and sold by Hercules Powder Company. Company makes copies of this booklet available on request.
136G Hercules Powder Co.

Paraformaldehyde.....New bulletin reporting on properties and uses of this form of formaldehyde. Important in the synthetic resin industry. Copies of the “Paraformaldehyde” bulletin are available on request.
136H Heyden Chem. Corp.

Pentachlorophenol.....Essentially a laboratory manual, valuable booklet gives detailed instructions for detection of penta, its sodium salt, & certain closely related phenols. Technical Bulletin No. 0-24.
136I Monsanto Chem. Co.

Pentaerythritol.....“Pentaerythritol in Synthetic Vehicles” provides answers to many of the problems confronting the vehicle manufacturer with regard to the use of pentaerythritol in resins and alkyds. 22 p.
136J Delaware Chem.

Pentaerythritol.....Reduce purchase & inventory problems with Double Duty P. E. Costs no more than “technical” grade, yet it qualifies for both preminium & low-cost alkyd resin applications. See Celanese P. E. Bulletin.
136K Celanese Corp. of America.

Pentaerythritol.....Position of PE relative to other polyols . . . considerations leading to its increasing use . . . technical advantages in terms of cost . . . explained in “Economics of Hercules Pentaerythritol.”
136L Hercules Powder Co.

1, 5-Pentanediol.....Makes available technical information on 1, 5-pentanediol (pentamethylene glycol). Includes physical properties, net container contents, reactions & applications, etc. Reference No. F-40006.
136M Carbide & Carbon Chem.

Peracids, Aliphatic.....Analysis of aliphatic peracids—description of new method based on use of ceric sulfate as a titrant for H_2O_2 present, followed by iodometric determination of peracid present. Bulletin No. 24.
127ll *Becco Chem. Div.

Perchlorethylene.....6 p. Folder describes Diamond perchlorethylene for professional dry cleaning at its best, outlines advantages it gives to drycleaners; also includes physical properties of this new solvent.
136N Diamond Alkali Co.

Peroxide Bleaching.....Reprint of lecture from University of Maine Lecture Series on pulp and paper manufacture. Describes present status of peroxide bleaching of pulps. Bibliography appended. Bulletin No. 47.
127mm *Becco Chem. Div.

Peroxide Bleaching Processes.....Three Becco peroxide bleaching processes which are of prime utility for bleaching, superbleaching and prevention of reversion of Southern woods are described in Bulletin No. 65.
127mm *Becco Chem. Div.

Peroxides.....A review of present status of application research on uses of hydrogen peroxide & peracetic acid in bleaching, organic synthesis, polymerization, sanitizing, etc. Request illustrated Bulletin No. 36.
127oo *Becco Chem. Div.

Peroxides, Alkaline Earth Metal.....Descriptive Bulletin contains valuable information on chemical and physical properties, uses and handling of calcium peroxide, zinc peroxide, and magnesium peroxide. No. 7.
127pp *Becco Chem. Div.

Peroxygen Compounds.....Uses of peroxygen compounds for carroting, fulling, shrink-proofing and dyeing of wool are discussed on the basis of a large number of literature references. Find data in Bulletin No. 35.
127qq *Becco Chem. Div.

Peroxygen Compounds.....Surface treatment of metals with peroxygen compounds survey of recommended procedures for passivating, cleaning, etching, stripping, oxidizing and coating metal surfaces. Bulletin No. 39.
127rr *Becco Chem. Div.

Peroxygen Compounds.....Describes the use of peroxygen compounds for reducing degree of polymerization and refining of cellulose . . . and for desulfurizing viscose rayon filaments. Bulletin No. 43.
127ss *Becco Chem. Div.

Peroxygen Compounds.....Reference deals in great detail with chemical polishing processes for steel, aluminum and brass, surface cleaning and surface passivating procedures. Ten references. Bulletin No. 51.
127tt *Becco Chem. Div.

Persulfates.....Offers reference, “Uses of Persulfates—A Bibliography”—a selected list of literature references based on ‘Chemical Abstracts” & covering period from 1907 to 1950. Bulletin No. 34.
127uu *Becco Chem. Div.

Pesticides, Granular.....Announces availability of a new issue of Attaclay Pesticide Digest. Entire Digest devoted to granular pesticides in general, & granular pesticide control of European corn borer in particular.
136O Minerals & Chem. Corp.

Phenobarbital USP Powder.....An odorless, white powder having a somewhat bitter taste. Uses—a sedative, hypnotic and antispasmodic in human and animal treatment. Full details in Technical Information Sheet.
136P Mallinckrodt Chem. Wks.

Phenolic Spheres.....The tiny spheres, made of Bakelite phenolic resin and filled with sealed-in gas, can cut crude oil losses as much as 80 to 90 per cent. Request “The Microballoon Layer Reduces Evaporation Losses.”
136Q Bakelite Co.

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136R Dow Chem. Co.

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136S A. R. Maas Chem. Co.

Phosphating Compounds.....New pamphlet describes in detail the complete Turcoat line of phosphating compounds. Includes a phosphating reference chart. Request “A Better Bond . . . For Organic Finishes.” 4 p.
136T Turco Products.

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136U American Agricultural Chem.

Phosphorus Tribromide.....Phosphorus tribromide has long been established as a valuable intermediate primarily through its outstanding characteristics as a bromine donor. Makes available detailed information.
136V Dow Chem. Co.

Pigments, Molybdate.....Valuable reprint entitled, “Evaluating Molybdate Pigments as Corrosion Inhibitors,” discusses possible use of slightly soluble molybdates in white and tinted inhibitive paints.
136W Climax Molybdenum Co.

Piperazines & Pyrazines.....A literature survey covering the reactions and applications of these compounds. Pertinent data extracted from 177 sources provides a quick review of their chemistry. 33 p. booklet.
136Y Wyandotte Chem. Corp.

* From advertisement, this issue.

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Plasticizers.....Citroflex plasticizers are unique in that they are all derived from citric acid, a tribasic, monohydroxy acid well known for its many food applications. Details of line in Technical Bulletin No. 31.
137A Chas. Pfizer & Co.

Plasticizers.....Illustrated, 20 p. describes a premium monomeric plasticizer, Hercoflex 600 . . . an ester of pentaerythritol and a saturated aliphatic acid. Physical and chemical properties and applications.
137B Hercules Powder Co.

Plasticizers.....Up-to-date description and properties of plasticizers, synthetic resins, pentaerythritol, xylene derivatives, and nonionics made and sold by Hercules' Synthetics Department. Request details.
137C Hercules Powder Co.

Plasticizers.....76 p. technical reference describes company's vast line of plasticizers. Includes information on: formula; molecular weight; specifications; properties; suggested uses; containers; test data; etc.
137D Ohio-Apex Div.

Plasticizers.....Illustrated, 80 p. describes Flexol line: summary of physical properties; performance in PVC compounds; physical properties as related to performance characteristics; etc. Book F-5882C.
137E Carbide & Carbon Chem.

Plasticizers.....New booklet describes Plasticizer 84, distilled butyl phthalate plasticizer, as replacement for dibutyl phthalate in nitrocellulose lacquers. Request the "Plasticizer 84" booklet.
137F Eastman Chem. Products.

Plasticizers, Extender.....A low-cost, clear, mobile, high-boiling hydrocarbon, HB-40 is widely used as a secondary plasticizer in polyvinyl chloride formulations. Request Technical Bulletin No. P-104.
137G Monsanto Chem. Co.

Plasticizers, Vinyl.....Epoxy fatty acid ester plasticizers—an investigation of the performance of epoxy fatty acid esters as vinyl plasticizers. For a copy of valuable article reprint, request Bulletin No. 56.
127vv *Becco Chem. Div.

Polybutenes.....Feature valuable advantages: high viscosity; minimum thermal decomposition residue; non-drying; color stable; non-migrating; low cost; etc. For details, request Technical Bulletin No. 12.
137H Indoil Chem. Co.

Polycyclic Hydrocarbons.....Literature describes polycyclic hydrocarbons (pyrene, phenanthrene, fluoranthene); physical properties of current production; uses & suggested applications; etc. Book No. F-8942.
137I Carbide & Carbon Chem.

Polyethylene.....Fully illustrated, 20 p. describes Super Dylan polyethylene; heat resistance; rigidity; chemical resistance; low temperature toughness; tensile strength; applications; etc. Reference No. C-5-216.
137J Koppers Co.

Polyethlene.....''Plastic for Chemical Engineering Construction—Polyethylene'' details molecular structure of polyethylene & discusses its mechanical, electrical & chemical properties & characteristics.
137K American Agile Corp.

Polyethylene.....Offers new 14 p. brochure describing currently available grades of low molecular weight A-C Polyethylene. Gives actual and suggested end uses for these versatile polymers. Bulletin No. 116.
99 *Semet-Solvay Div.

Polyethylene.....Announces a new 16 p. book on Injection Molding of Tenite Polyethylene. Contains basic data about molding of Tenlie Polyethylene, along with a suggested guide for correcting molding difficulties.
137L Eastman Chem. Products.

Polymer Acrylic.....Cyanamer 370 is a solid—the ideal form for use as a thickening agent in waxes, adhesives, latices and numerous other applications. Makes available a product sample and Data Sheet.
137M American Cyanamid Co.

Polyphenyl, Chlorinated.....Aroclor 1248 is a highly stable chlorinated polyphenyl; does not support combustion up to its boiling range 652° to 725° F.; is non-corrosive. Request technical information.
137N Monsanto Chem. Co.

Polyvinyl Acetate Beads.....Ideally used for: low cost thickeners for inks, paints, lacquers, hot-melt coatings; metallic inks for use on celliophane, glassine, foil & plastics; etc. Data & samples of Lemac on request.
137O Borden Co.

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137P Colton Chem. Co.

Polyvinyl Acetate Emulsions.....Polyco 679 for water-resistant adhesives . . . a 55% solids anionic type emulsion developed for use in non-discoloring high temperature heat-seal adhesives. Data and samples.
137Q Borden Co.

Polyvinyl Acetate Emulsions.....Valuable reference made available to help you determine the Darex PVAc best suited to your needs. Includes description of features, specifications, typical end uses. Brochure No. E-12.
137R Dewey & Almy Chem. Co.

Polyvinyl Materials.....Products made from Geon rigid vinyl include corrosion-proof pipe, fumes ducts, tanks, trays, materials that can be machined, planed, sawed, drilled, and cemented. Request Bul. Geon 8700-A.
137S B. F. Goodrich Chem. Co.

Polyvinylpyrrolidone.....PVP (polyvinlypyrrolidone) features a unique combination of properties . . . for many industrial fields in a wide range of applications. Technical information & samples available.
137T General Aniline & Film Corp.

Potassium Acetate, N.F., Crystal, Technical.....Offers an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-40821.
137U Baker & Adamson.

Potassium m-Bisulfite Granular.....White, free-flowing crystalline granules; slight odor of sulfur dioxide. Widely used in food and beverage industry. Full details in company's Technical Information Sheet.
137V Mallinckrodt Chem. Wks.

Potassium Borohydride.....Detailed reference gives composition, properties, solubility, applications, typical reductions, handling, safety and storage information. Request copy of Technical Bulletin No. 301-B.
137W Metal Hydrides.

Potassium Persulfate.....Company announces the availability of literature describing the product line. Includes information on chemical & physical properties, uses & handling. Request Bulletin No. 11.
127ww *Becco Chem. Div.

Potassium Titanium Fluoride.....New data sheet includes information on: chemical formula; physical and chemical properties; typical anlysis; packaging; uses; etc. Request copy of Technical Data Sheet KCC-101.
137X Kawecki Chem. Co.

Propargyl Halides.....Three centers of reactivity. Chemical intermediate for terpenes and pharmaceuticals, etc. Agricultural uses as soil fumigant, etc. Announces availability of technical information and samples.
137Y General Aniline & Film Corp.

Propylene Diamine.....New technical bulletin presents information on the uses of propylene diamine and its physical and physiological properties, specifications & shipping data. See Bulletin F-40037.
137Z Carbide & Carbon Chem.

Propylene Glycol.....Comprehensive literature includes applications, physiological properties, specifications, physical properties and solubility data for propylene glycol. Request 16 p. reference, No. F-8738.
137AA Carbide & Carbon Chem.

Propylene Polymers.....Describes two-high-quality commercial propylene polymers, Propylene Trimer & Propylene Tetramer. Includes specifications, molecular structure & other data. Technical Bulletin No. 20.
137BB Sun Oil Co.

Pyrrolidine.....This cyclic secondary amine functions as both a catalyst & reaction intermediate. Unusual compounds can be made by reactions involving addition, condensation, acylation, etc. See Bulletin No. 28.
137CC E. I. du Pont de Nemours.

2-Pyrrolidone.....Polymerizes to high-molecular weight, linear, nylon-type, polyamide condensation product. Gives g-aminobutyric acid and deriatives, also N-acyl lactams. Technical information and samples.
137DD General Aniline & Film Corp.

Reducing Agents.....If your process requires a reducing agent it will be to your advantage to investigate the complete line of Jacques Wolf Hydrosulfites & Sulfoxylates. Complete data & samples on request.
137EE Jacques Wolf & Co.

Reodorants, Industrial.....''Alamask'' TAL can be used in direct processing of crude tall oil, masking the odors & allowing this material to be used in preparation of sanitary, textile & specialty soaps. Full data.
137FF Rhodia, Inc.

Resin-Coated Sand.....New 16 p. booklet on resin-coated sand for shell molding is available. Advantages are: elimination of dusting, excellent blowability, resin economy, improved flowability of mix.
137GG Monsanto Chem. Co.

Resin, Coumarone-Indene.....The special pale, low-odor coumarone-indene resin . . . prescribed for freeze-thaw stable PVAc emulsion paints . . . features valuable cost-saving advantages. Request samples & data.
137HH Neville Chem. Co.

Resins.....Cumar resin provides successful & economical solutions to production problems in a wide variety of industries. Illustrated, 64 p. covers uses, product data & properties, testing methods, etc.
137II Barrett Div.

Resins.....Company makes technical booklet available describing the advantages of air-entrained concrete, and the advantages of Vinsol as an air-entraining agent. Request a copy of this booklet on Vinsol Resins.
137JJ Hercules Powder Co.

Resins.....Exon 470 combines excellent water, grease & chemical resistance with stability to heat & light & unusual resistance to weather & abrasion. Makes available descriptive product literature.
137KK Firestone Plastics Co.

Resins.....Exon 480—specifically for records. This Firestone resin provides unique production advantages in the blending, fusing, performing and molding processes. Makes available descriptive literature.
137LL Firestone Plastics Co.

Resins.....Exon 481 has exceptional tensile strength . . . over 1,000 lbs. per sq. in. with an elongation factor up to 200%. Soluble in ketones, compatible with plasticizers, stabilizers, pigment types. Request details.
137MM Firestone Plastics Co.

TECHNICAL LITERATURE

Resins, Acrylic—

Silicon Dioxide

Resins, Acrylic.....Lucite acrylic resins available with a wide range of molding characteristics & properties & in a variety of transparent, translucent & opaque colors. Offers descriptive literature on request.
138A E. I. du Pont de Nemours.

Resins, Cashew Nut Shell Liquid..... Illustrated Folder describes the applications of cashew nut shell liquid resins. Includes: brake linings and clutch facings; cements and adhesives; laminated boards; etc. 8 p.
138B British Resin Products, Ltd.

Resins, Casting.....Literature describes Epocast 4-B...a cream colored casting resin recommended when a hard surface is desired of the cast epoxy. For complete information, request Technical Bulletin EP-54-10a.
138C Furane Plastics.

Resins, Coating.....New booklet covers Plaskon urea & melamine coating resins for modern industrial baking enamel systems. Presents complete properties of these resins together with recommendations for use. 12 p.
138D Barrett Div.

Resins, Condensation.....A water-white sulfonamide-formaldehyde condensation resin, Santolite MHP is widely used to give polyvinyl acetate adhesives quick tack. Details in Technical Bulletin No. 0-94.
138E Monsanto Chem. Co.

Resins, Dry Blending.....Three "Tech Book Facts" bulletins cover processing, formulating & compounding with Pliovic Dry Blending Resins. For full details, request the following bulletins 55-298, 55-299 & 55-310.
138F Goodyear Tire & Rubber Co.

Resins, Electrical Grade.....Three "Tech Book Facts" bulletin cover compounding, formulating & processing with Electrical Grade Pliovic Resins. Request these bulletins: 55-180, 55-181 & 55-182.
138G Goodyear Tire & Rubber Co.

Resins, Epoxy.....Furane Plastics has completed detailed studies on semi-rigid epoxy resins (Epocast 9A—formulations cast in conjunction with "Flexibilizer T"). Request Bulletins EP-54-10a, EP-55-61.
138H Furane Plastics.

Resins, Epoxy.....Illustrated, 32 p. reference, "Bakelite Review," includes a valuable section on epoxy tooling—"On Stream With Epoxy Tools"—the first in a series of case histories. October, 1955.
138I Bakelite Co.

Resins, Epoxy.....6 p. discusses Bakelite C-8 epoxy resins & hardeners. Production methods for processing C-8 epoxy resins are presented; also includes property data for specific resin & hardener formulation.
138J Bakelite Co.

Resins, Heat-Resistant.....Epocast 6 is newest addition to Epocast line of resins. Though relatively new it has shown remarkable heat resistance, superior to all other resins of its class. Tech. Bulletin EP-55-47.
138K Furane Plastics.

Resins, High Styrene.....Darex 43G is an excellent rubber reinforcing resin for shoe soles, floor tiles, wire & cable insulation, mechanical molded goods. Characteristics, features, etc., in Bochure No. C-15.
138L Dewey & Almy Chem.

Resins, Hydrocarbon.....Covers properties & specifications of resins & resin solutions & gives many specific formulations & cooking procedures for aluminum vehicles, etc., in Tech. Bulletins 219 & 203.
138M Velsicol Chem. Corp.

Resins, Ion Exchange.....New Nalco bulletin gives technical data on Nalcite SAR & SBR anion exchangers... including complete up-to-the-minute information on silica removal. Request your copy. Bulletin No. 57.
138N National Aluminate Corp.

Resins, Laminating.....Epocast 4-B-2 is a cream colored laminated resin containing inert mineral fillers chosen to impart more tackiness to resin & develop greater surface hardness. Technical Bulletin EP-54-24.
138O Furane Plastics.

Resins, Nylon.....Zytel is the du Pont trade-mark for a versatile group of long-chain synthetic polymeric amides exhibiting extreme toughness & strength. Complete data on properties & applications on request.
109b *E. I. du Pont de Nemours.

Resins, Para Coumarone Indene.....Piccoumaron is the trade name of company's line of Para Coumarone Indene Resins. Presents compatibilities, color & melting points range of Piccoumaron. Bulletin No. 12-64-5-12-55.
138P Harwick Standard Chem. Co.

Resins, Penacolite.....Bulletin gives description, typical properties, physical & cure characteristics, applications, storage & handling information on Penacolite brittle resins B-1A, B-16, B-22. Bul. C-6-230.
138Q Koppers Co.

Resins, Phenolic.....High boiling phenols and meta-phenols 220, alone or in combination with other suitable phenols, react with formaldehyde to produce useful, cross-linked, thermo-setting resins. Bul. F-40059.
138R Carbide & Carbon Chem.

Resins, Plastisol.....Exon 654 is expressly created to impart excellent heat and light stability, physical toughness and chemical stability to your products. Request full information on entire product line.
138S Firestone Plastics Co.

Resins, Polyamide.....“Versamids — A Demonstration in Resin Versatility” contains data about Versamids plus information on each of the eight types currently marketed by General Mills. Request Bulletin No. 11-E.
138T General Mills.

Resins, Polyester.....Series of Bulletins covers resins & other IC Polyester products used in hand lay-up applications such as manufacture of boats, swimming pools, large structural lay-ups, bag molding, etc.
138U Interchemical Corp.

Resins, Polyster.....Hetron, a polyster that handles most common acids & many organic materials & gases, wet or dry, is fire-resistant. Hetron parts burn slowly & snuff out when flame is removed. Request data.
138V Hooker Electrochem. Co.

Resins, Polyester.....Atlac 382 plastic features a superior combination of low weight & high strength, dimensional stability & excellent flow characteristics. Bulletin covers properties & chemical resistance.
97e *Atlas Powder Co.

Resins, Polyethylene.....Illustrated references covers Petrothene line: what is polyethylene? how is it made? what are its properties? what is it used for? how is it processed? how is it fabricated? etc. 16 p.
138W U. S. Industrial Chem. Co.

Resins, Polyethylene.....Tough, flexible Alathon polyethylene resin stands up well against abrasive slurries. Widely used in industrial pipe applications. Offers complete information on the properties and applications.
138X E. I. du Pont de Nemours.

Resins, Polyvinyl Chloride.....Describes Firestone Exon 402-A—a polyvinyl chloride resin specifically designed for unplasticized rigid applications. Complete data on properties. Sales Service Bulletin No. 38.
138Y Firestone Plastics Co.

Resins, Polyvinyl Chloride.....Data Sheet gives a typical analysis of Diamond PVC-50 polyvinyl chloride resin, summarizes its advantages for wire insulation, calendared film & sheeting, & other applications.
138Z Diamond Alkali Co.

Resins, Polyvinyl Chloride.....Reference describes Pliovic EDB90V and Pliovic EG90V . . . electrical grade—Underwriters' approved—vinyl resins. Includes data on types and typical properties. Ref. No. 55-179.
138AA Goodyear Tire & Rubber Co.

Resins, Polyvinyl Chloride.....Pliovic DB is the family name for a series of polyvinyl chloride resins developed & produced for their dry blending characteristics. Describes DB80V & DB90V in detailed Ref. No. 55-360.
138BB Goodyear Tire & Rubber Co.

Resins, Polyvinyl Chloride.....Scrupulous attention to purity produces polyvinyl chloride resin that can be fabricated with complete confidence. Literature and product samples of Vygen available on request.
138CC General Tire & Rubber Co.

Resins, Polyvinyl Chloride.....Describes Marvinol VR-30, a new & unique polyvinyl chloride resin designed, especially for the calendar industry. Covers properties, compounding & processing. Bulletin No. 2.
138DD Naugatuck Chem. Div.

Resins, Polyvinyl Chloride.....Multigraphed Data sheet lists physical properties of Diamond PVC-45 polyvinyl chloride resin, & cites its advantages for calendereing of film & sheeting & other applications.
138EE Diamond Alkali Co.

Resins, Resorcinol.....Literature includes Specification Bulletins Nos. 300 and 300/1 on Synvaren PLS-Resorcinol Type Resins for the Woodwork-in Industry . . . for Bonding Other Materials Than Wood. 18 p.
138FF Synvar Corp.

Resins, Resorcinol-Formaldehyde..... Synvaren PLS-R is a "stopped" resorcinol-formaldehyde resin for use with latex in treatment of rayon & nylon for subsequent adhesion to rubber. Bulletin 12-198-0-10-55.
138GG Harwick Standard Chem.

Resins, Splining.....Epocast H-861-A, a thixotropic paste resin, has been evaluated at various aircraft companies and has proven to be the best of its kind. Find complete data in Technical Bulletin EP-54-35.
138HH Furane Plastics.

Resins, Styrene-Butadiene.....Detailed reference, "Types and Properties," describes Pliolite S-5. Includes information on: physical properties; chemical properties; electrical properties; etc. Ref. No. 55-325.
138II Goodyear Tire & Rubber Co.

Resins, Styrene-Butadiene.....Maintaining color uniformity is no longer a problem with masonry paints based on Pliolite S-5, Styrene-Butadiene resin. See "Color Uniformity of Pliolite S-5 Finishes," Ref. No. 55-274.
138JJ Goodyear Tire & Rubber Co.

Resins, Synthetic.....8 p. reference describes the Alpex line of synthetic resins. Included are sections on: general properties; physical properties; compatibility of Alpex with various materials; etc.
138KK Alkydol Labs.

Resins, Synthetic.....Bulletin describes the Piccolyte line—the low-cost resin with 7 outstanding advantages: pale color; ecomonical; permanent; waterproof; many grades; neutral; low-cost. Request your copy.
138LL Pennsylvania Indus. Chem.

Resins, Synthetic.....Illustrated, 24 p. "Resin Review" (No. 15) includes sections on Acryloid B-66, Amberlac 292X and Uniformite MM-47 specialty coating resins;; polyster-urethane foams; resin reactivity; etc.
138MM Rohn & Haas Co.

* From advertisement, this issue.

1956 INVENTORY

Resins, Synthetic.....CB-35 offers many advantages over materials now in use, particularly in areas of baking, gas formation, collapsibility & resistance to "over baking." Technical literature & samples on request.
139A B. F. Goodrich Chem. Co.

Resins, Synthetic.....New 4 p. booklet includes examples of typical applications with data on flexibility, viscosity, pot life, cure times & available forms. Send for "Scotchcast Resins" booklet today.
139B Minnesota Mining & Mfg. Co.

Resins, Tetrafluoroethylene.....Teflon tetrafluoroethylene resins used extensively in process industries. Offer chemical inertness, high heat resistance, low-temperature toughness, etc. Properties & applications.
109a *E. I. du Pont de Nemours.

Resins, Thermoplastic.....Three "Tech Book Facts" bulletins discuss properties, calendering, laminating and compounding Pilo-Tuf C75 for Calendering. Request Bulletins 55-192A, 55-193 & 55-194.
139C Goodyear Tire & Rubber Co.

Resins, Vinyl.....Coatings based on Bakelite resins are tough, durable & tenacious—resist acids, alkalies, salt air & water, temperature extremes, rough service. "Bakelite Resin Coatings for Industry."
139D Bakelite Co.

Resins, Vinyl Chloride Copolymer..... Exon 450 is a vinyl chloride copolymer resin of intermediate molecular weight which may be used in solution resin work. Properties & characteristics in Bulletin No. 13.
139E Firestone Plastics Co.

Salts, Acetate.....Company offers reference booklet, "Armacs" describing the acetate salts of fatty amines. Includes chemical properties, applications, specifications, test results, & procedures.
79d *Armour Chem. Div.

Silica.....**Illustrated**, 8 p. Brochure contains detailed information on the new industrial chemical, Quso . . . a pure white, soft, finely divided silica. Includes data on usage and physical and chemical properties.
139F Philadelphia Quartz Co.

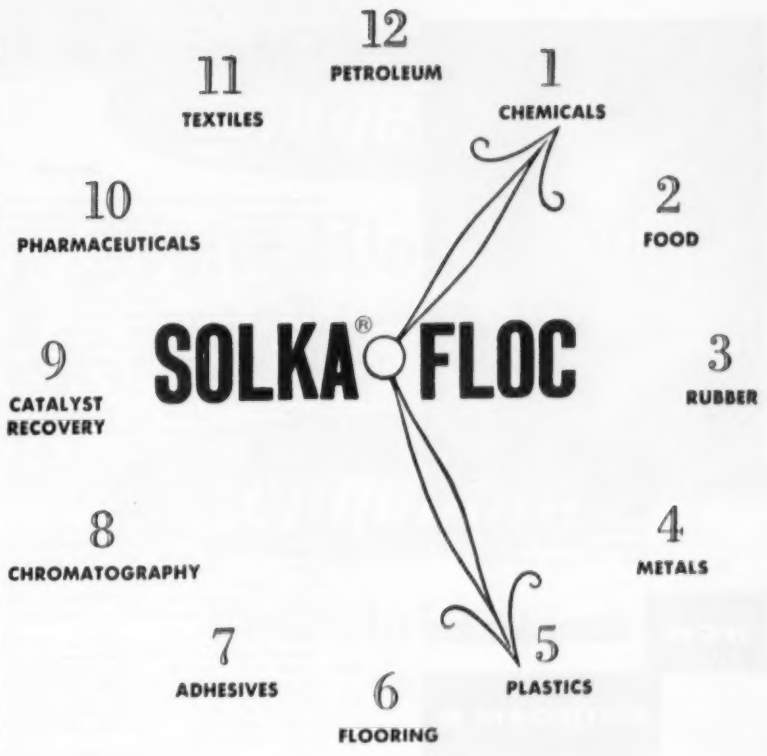
Silica, Colloidal.....Describes Cab-O-Sil—a new colloidal silica for use in the paint industry—as an antisettling agent, to modify flow properties, as a transparent extender, etc. Bulletin No. CPai-2.
139G Godfrey L. Cabot, Inc.

Silica Gel.....A superior drying agent for natural gas. For detailed information and field performance data on the use of Davison silica gel for the drying of natural gas, request Technical Bulletin No. 201.
139H Davison Chem. Co.

Silicates.....20 p. booklet lists the grades of silicate of soda and other silicated alkalies manufactured by company, with certain properties, major uses and general data to acquaint users with the materials.
139I Diamond Alkali Co.

Silicon Dioxide..... Describes CAB-O-SIL, a new raw material developed for use in reinforced plastics industry to eliminate certain problems now encountered in molding & fabricating operations. Report CPia-1.
139J Godfrey L. Cabot, Inc.

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Silicone Products.....Announces release of "1956 Reference Guide to Dow Corning Silicone Products." Products grouped by physical form & cross-indexed by usage. Thoroughly illustrated with charts, tables, graphs, etc.
140A Dow Corning Corp.

Silicones.....Lists various "Linde" silicones, in liquid & solid forms, in broad categories of water repellants; oils & oil emulsions; electrical insulating resins; etc. Request copy of Catalog No. F-50002.
140B Linde Air Products Co.

Soaps-Detergents.....Illustrated, 36 p. gives data on toilet & bath soaps, pumice & liquid hand soaps, packaged synthetic detergents, scouring cleansers, etc. "Handy Soap & Synthetic Detergent Buying Guide."
140C Colgate-Palmolive Co.

Soda Ash.....Releases an information Folder on Trona soda ash. Includes data regarding production, various grades of soda ash, distribution and other material pertaining to industrial applications.
140D American Potash & Chem.

Soda Ash.....64 p. fully illustrated Manual furnishes valuable information: history; production and uses; method of manufacture; forms and grades; shipment; unloading and handling; properties; etc.
140E Columbia-Southern Chem.

Soda Ash.....West End is a pure white, free-flowing and rapidly soluble soda ash that produces a far cleaner, more uniform product. Announces the availability of product samples, prices, and technical information.
140F West End Chem. Co.

Soda Bleach Solutions.....48 p. Guidebook furnishes factual data on the general properties of hypochlorites, stability of hypochlorite solutions, the preparation of solutions, caustic soda solutions, etc.
140G Diamond Alkali Co.

Soda, Caustic.....Technical & engineering service bulletins cover a wide scope of subjects. Includes: physical & chemical properties, use, handling & storage of caustic soda, soda ash. Bulletin Nos. 5 & 6.
140H Solvay Process Div.

Soda, Caustic.....Wall chart (17" x 23") gives 37 specific, successful suggestions for safely handling solid, liquid & flake caustic soda. Safety recommendations cover first aid measures, protective practices, etc.
140I Diamond Alkali Co.

Soda, Caustic.....'Caustic Soda Buyer's Guide" contains helpful facts on economics of 50% & 73% solutions; other forms of caustic soda; capacities of tank cars & other containers; useful shipping data; etc.
140J Hooker Electrochem. Co.

Sodium Benzoate.....In perishable food products, sodium benzoate offers low-cost insurance against bacterial action. For details of this assured protection, request leaflet, "Preserving with Sodium Benzoate."
140K Monsanto Chem. Co.

Sodium Benzoate.....Company makes available technical data on its line of sodium benzoate—flake or powdered. Both are dust-free to prevent sneezing. For more complete information, request literature.
140L Hooker Electrochem. Co.

Sodium Bichromate.....5 p. hectographed Bulletin is a compilation, in outline form, of 71 known industrial uses and patented applications of sodium bichromate. Also includes summary of potassium bichromate.
140M Diamond Alkali Co.

Sodium Borohydride.....MH sodium borohydride, $MaBH_4$, will reduce esters, acids, acid anhydrides, and acid halides. Announces the availability of detailed Bulletin 502-F and typical reduction procedure.
140N Metal Hydrides.

Sodium Carbonate Peroxide.....Company announces the availability of literature describing the product line. Included are chemical and physical properties, uses and handling. Request Bulletin No. 6.
127xx *Becco Chem. Div.

Sodium Carboxymethylcellulose.....Detergency-grade Carbose is a special CMC for promoting home & commercial soaps & detergents. Makes available valuable technical information & product samples of Carbose.
140O Wyandotte Chem. Corp.

Sodium Citrate.....Complex-shaped interiors can be successfully plated without electricity by electroless nickel plating using Pfizer sodium citrate. Request Technical Bulletin 68, "Electroless Nickel."
140P Chas. Pfizer & Co.

Sodium Dispersions.....Sodium dispersions were first developed by Du Pont & are particularly useful in systems where sodium is insoluble. Request literature on sodium dispersions & how to use them to advantage.
140Q E. I. du Pont de Nemours.

Sodium Fluoborate, Crystal, Technical.....Furnishes an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-42401.
140R Baker & Adamson.

Sodium Hydride.....A powerful drying agent for hydrocarbons, ether & amines. Reduces metalic oxides easily . . . affords an excellent method for preparing exceptionally pure alcoholates. Request Fact Sheet.
140S Ethyl Corp.

Sodium Hydride.....Makes available a detailed technical reference containing information on: composition; properties; solubility; applications; typical reductions; handling; safety; storage. Technical Bulletin 507-C.
140T Metal Hydrides

Sodium Hydride Oil Dispersion.....Detailed reference contains information on composition, properties, solubility, applications, typical reductions, handling, safety and storage. Request Technical Bulletin No. 508-A.
140U Metal Hydrides.

Sodium Lignosulfonate.....Polyfon . . . a sodium lignosulfonate . . . imparts strength and stability to chemical foams. Polyfon may be applicable to your foam problem. Samples & Bulletins 301 and 304.
140V West Va. Pulp & Paper Co.

Sodium Nitrite.....Sodium Nitrite is being used, alone & in combination with other materials, for the cleaning, neutralizing & protection of metals in diverse applications. Request new Book & sample.
140W Solvay Process Div.

Sodium Perborate.....Becco sodium perborate is widely used for dye development and in the manufacture of powder bleaches, cosmetics, etc. For complete product information, request detailed Bulletin No. 45.
127yy *Becco Chem. Div.

Sodium Phosphates.....Announces availability of a valuable reference, "Sodium Phosphates"—an easy-reading booklet giving a brief yet complete review of technical and commercial aspects of sodium phosphates.
140X Monsanto Chem. Co.

Sodium Pyrophosphate Peroxide.....Announces the availability of descriptive literature on sodium pyrophosphate peroxide—chemical and physical properties, uses and handling. Product Bulletin No. 8.
127zz *Becco Chem. Div.

* From advertisement, this issue.

1956 INVENTORY

Sodium m-Silicate.....Valuable data on Drymet anhydrous—the most highly concentrated form of sodium m-silicate. Drymet File Folder contains complete technical information and suggested formulations.
141A Cowles Chem. Co.

Sodium Silicates.....20 p. pocket manual describes Diamond sodium silicates, furnishing data on each product covering its principal physical properties, major industrial applications, the basic advantages, etc.
141B Diamond Alkali Co.

Sodium Stearate Purified Powder.....A fine, white powder; slight fatty acid odor. Thickening & wetting agent for creams, shampoos & water base ointments; detergent for dentrifices; etc. Technical Information Sheet.
141C Mallinckrodt Chem. Wks.

Sodium Sulfate.....West End Chemical has doubled its production of sodium sulfate to over 100,000 tons a year. Company makes available on request product samples, prices and freight schedules.
141D West End Chem. Co.

Sodium Sulfhydrate.....Hooker, sodium sulfhydrate dissolves rapidly, even in cold water. There's virtually no sedimentation even after long standing. Available in 90-lb. & 350-lb. drums. Technical Data Sheet.
141E Hooker Electrochem. Co.

Sodium Sulfide.....The clean, strong flakes dissolve right into process, even without stirring. No waiting . . . no decanting. For complete information on Hooker's sodium sulfide, request Technical Data Sheet.
141F Hooker Electrochem. Co.

Sodium Sulfite Anhydrous Photo Granular.....Fine, white, free-running crystalline granules; odorless. Chiefly used in photographic developing and fixing solutions. Details in Technical Information Sheets.
141G Mallinckrodt Chem. Wks.

Sodium Toluene Sulfonate.....Company makes available a Technical Bulletin with details information covering their line of sodium toluene sulfonate and potassium toluene sulfonate. Includes uses and specifications.
141H Hydrocarbon Chem.

Sodium Trimethoxyborohydride..... White porous powder, m.p. 230°C., with decomposition. Evolves hydrogen with water. Soluble in organic solvents. Makes available complete product information in Bulletin 504.
141I Metal Hydrides.

Solubilizers.....Describes Witco GMO, a glycerol mono oleate of the non-self-emulsifying type for dispersing or "solubilizing" alkyd resins in "odorless" paint systems. Request Technical Service Bulletin H-4.
141J Witco Chem. Co.

Solvent Recovery.....Barnebey-Cheney pre-piped package recovery systems pay for themselves even though handling as little as 400 Cfm. "Solvent Recovery Actually Takes Dollars out of the Air"—Bul. 821-53.
141K Barnebey-Cheney Co.

Solvents.....Describes Celanese Solvent 203 . . . a latent solvent for lacquers & thinners—a brake fluid component—economical replacement for normal butyl alcohol. Covers properties, specifications, etc.
141L Celanese Corp. of America.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

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TECHNICAL LITERATURE

Solvents—

Zirconium

Solvents.....You can select the right solvent or solvent combination from Carbide's series of esters, ketones, glycol-ethers, and alcohols. Solvent Selector offers data on solvents, plasticizers, etc. Bul. F-7465E.
142A Carbide & Carbon Chem.

Solvents.....2-50-W Hi-Flash Solvent offers you: high flash point; good odor; high solvency power; coat tar origin; slow, even evaporation rate; attractive low price; etc. Request product samples and price data.
142B Neville Chem. Co.

Solvents.....A remarkably versatile series of solvents, Poly-Solvs are now available in commercial quantities—drums, tank cars, compartmented tank cars—from Doe Run plant at Brandenburg, Ky. Data Sheets and samples.
142C Olin Mathieson Chem. Corp.

Solvents.....Assure controlled evaporation. In paint & surface coating industry . . . solvents offer precise characteristics to meet your most exacting requirements. Full data on characteristics & specifications.
142D Esso Standard Oil Co.

Solvents.....These solvents are recommended for low odor and odorless products. Detailed specifications of these Shell Solvents are contained in the booklet, "Shell Solvents for Low Odor & Odorless Paints."
142E Shell Oil Co.

Solvents, Aromatic.....Cover a very wide evaporation range. Their individual characteristics satisfy specific requirements in a great variety of formulations. See, "Shell Aromatic Solvents for the Coatings Industry."
142F Shell Oil Co.

Solvents, Aromatic & Aliphatic..... Epesol aromatic & aliphatic solvents are rigidly controlled for exceptional purity, uniformity & quality . . . to contribute to manufacture of top quality paint. Request Catalog.
142G Eastern States Chem. Corp.

Solvents, Chlorinated.....14 p. Bulletin furnishes technical information on Diamond chlorinated solvents. Included are: carbon tetrachloride, perchlorethylene, methylenechloride, chloroform, methyl chloride.
142H Diamond Alkali Co.

Solvents, Odorless.....With either of Sinclair's two types of top-quality Odorless Solvents . . . you can produce a superior odorless paint. Makes available product samples, prices and complete information.
17a *Sinclair Chem.

Solvents, Aromatic..... Constant research and engineering know-how make Esso petroleum solvents outstanding for fine product character and high quality. Meet most exacting standards. Request information.
90-1a *Esso Standard Oil Co.

Solvents, Petroleum Aliphatic.....Offers solvents for every industrial need. Features include: special blending; laboratory purity; overnight delivery; technical assistance; etc. Folder gives typical specifications.
142I Modern Mineral Solvents.

Solvents & Solvent Oils.....New Bulletin furnishes technical information on Pieco Solvents and Solvent Oils. Charts showing typical analysis and distillation range for various grades are included in reference.
142J Pennsylvania Indus. Chem.

Sorbitol.....22 p. reference published by company reveals how manufacturers of confections and other foods can make use of the unusual qualities of sorbitol in their products. Request your copy of booklet, No. CD-83.
97a *Atlas Powder Co.

Specialties....."Lavender Reinforcer R.P." was developed after many requests for a specialty which would reestablish the light note often lost in preparation of lavender formulations. Product sample and data.
142K Rhodia, Inc.

Specialties, Perfume.....Attractive, 4 p. Folder describes origin, development & application of "specialties." Also includes a brief description of eight of the company's newest items in this category.
142L Dodge & Olcott.

Stabilizers.....Witco Stabilizer #80 is a high-efficiency, liquid stabilizer developed by company for polyvinyl chloride resins. Complete description & typical properties in Technical Service Bulletin S-6.
142M Witco Chem. Co.

Stabilizers.....New bulletin covers description, chemical composition, specification & recommended uses for Stabelan Liquid Stabilizers #110, #115, and #120. Request Bulletin 15-29-1-2-56.
142N Harwick Standard Chem. Co.

Starches.....Valuable 56 p. booklet, "The Story of Starches," completely describes the broad variety of National starches, the way they are produced, and the miracle of "man-made" starch derivatives. Request your copy.
142O National Starch Products.

Stearates.....Offers Standard Stearates —all the most widely used types for every application . . . and Special Purpose Stearates—made to order to fit particular requirements. Makes available specification data.
142P Nuodex Products Co.

Stearates, Metallic.....Manufacture under rigid controls provides assurance of a consistent product. Request booklet on Aero metallic stearates, containing Typical Analysis Data and Methods of Analysis.
142Q American Cyanamid Co.

Stearates, Metallic....."Stearates, Their Properties & Uses" lists composition of 46 metallic stearates, shows industries in which they are used & presents analysis of recommended applications. 36 p. Bulletin 55-2.
142R Witco Chem. Co.

Sugars, Rare.....Company announces the availability upon request of a valuable reference . . . a 24 p. Catalog and Price List which features data on rare sugars, amino acids, biological chemicals, etc.
142S Pfanstiehl Labs.

Sugar Turbidity.....Refined Syrups and Sugars, Inc. announces the release of a report entitled, "Sugar Turbidity Facts," which outlines the preliminary findings of a Turbidity Research Program company is conducting.
142T Refined Syrups & Sugars.

Sulphur Dichloride.....Paints passed thru sulphur dichloride vapor dry in from 2 to 20 seconds. This drying process works on paper, wood, cloth, metal, glass & plastics. Full data & samples are available upon request.
142U Hooker Electrochem. Co.

Sulphur Dioxide.....A versatile chemical reagent for industry, sulphur dioxide can be used as a reducing or bleaching agent, preservative, antichlor, neutralizer, pH control. Details in "Virginia SO_2" Folder.
142V Virginia Smelting Co.

Sulphuric Anhydride, Stabilized.....Sulfan has 99.5% SO_3 available for sulfonation reactions. In many applications, this means considerable savings in operating costs. Request complete technical information.
142W General Chem. Div.

Surface Active Agents....."Atlas" surfactants include more than 100 different non-ionin and ionic types—including emulsifiers, wetting agents, solubilizers, detergents, etc. Request technical data & free samples.
97d *Atlas Powder Co.

Surface Active Agents.....Industry has been finding more & more use for versatile non-volatile surface active agent as such, as salts or oil-soluble soap form. Request literature & sample of Alkaterege-C.
142X Commercial Solvents Co.

Surface Active Agents.....Makes available a report of toxicity studies on D-40 and Oronite Wetting Agent. Included are sections on: acute oral toxicity; subacute feeding in young rats; skin toxicity; etc. 10 p.
142Y Oronite Chem. Co.

Surface Active Agents.....Dispersant NI-O is an oil-soluble nonionic surface active agent specifically designed to give high detergency in those dry cleaning systems using any type of solvent. Bulletin No. 17 (8.52).
142Z Oronite Chem. Co.

Surface Active Agents.....Dispersant NI-W is a nonionic surface active agent designed to offer outstanding cotton detergency, lime soap dispersive power, etc. Properties & characteristics in Bulletin No. 18.
142AA Oronite Chem. Co.

Surface Active Agents.....Oronite surfactants offer utmost in uniformity & quality. New Alkane Technical Bulletin available in those interested in processing finished detergents from the basic raw material.
142BB Oronite Chem. Co.

Surface Active Agents.....Nonionic surfactant not only offers outstanding detergency, but it also provides thorough wetting, disperses solids, & emulsifies oil & grease. Complete technical data on Triton X-100.
142CC Rohn & Haas Co.

Surface Active Agents.....Illustrated, 28 p. covers Armour etho-chemicals—unique cationic & non-ionic surface active chemicals. Includes: chemical & physical properties; solubility data; applications; etc.
142DD Armour & Co.

Surface Active Agents.....Emulsifier 1990-A is a cationic surface active agent developed specifically for emulsification of pentachlorophenol. Reference includes physical properties, formulations, etc. Bulletin O-8.
142EE Armour & Co.

Surface Active Agents.....Highly surface active when used alone in aqueous systems, the Surfynols in conjunction with most other surface active agents give improved performance. Technical Bulletin.
142FF Air Reduction Chem. Co.

Surface Active Agents.....The non-ionic surface active agent, Polyethylene Glycol 600 Mono Oleate, has been found particularly efficient as a foaming agent for polyurethane rigid foams. Data & product samples.
142GG Glyco Products Co.

Surface Active Agents.....Bulletin offers data on chemical & physical properties & uses of Polyethylene Glycol 400 Monolaurate—a non-ionic surface active agent, used primarily for improving latex paints.
142HH Glyco Products Co.

* From advertisement, this issue.

Can't remember?

Can't quite recall who built that new plant, who developed that new process? Well, then, take a crack at finding the answer in this issue's Inventory of New Plants & Facilities (p. 7) or Inventory of New Processes & Technology (p. 45). They're designed to help you.

Surface Active Agents.....Presents an 80 p. "Guide to Formulation of Industrial Emulsions with Atlas Surfacants" . . . for polishes, lubricants, cutting oils, cleaning compounds, resins, paints, etc.
143A Atlas Powder Co.

Surface Active Agents.....Aerosol surface active agents feature great versatility: crystal growth control; leak testing; emulsion polymerization; dry cleaning. Booklet discusses various grades and profitable uses.
143B American Cyanamid Co.

Surfactant.....A series of 8 Igepal CO brands range from the oil-soluble Igepal CO-430 to the extremely hydrophylic Igepal CO-880. Igepal CO-630 lacks odor & is sediment-free. Request booklet on Igepal CO Brands.
143C Antara Chem.

Surfactant Selectors.....Atlas HLB Selector helps emulsion formulator by providing a ready reference to recommendations on Atlas surfactants & HLB values for 96 typical emulsion formulas. Selectors on request.
143D Atlas Powder Co.

Surfactants.....Company makes available valuable 72 p. reference, "A Guide to Formulation of Industrial Emulsions with Atlas Surfactants." Includes information on the HLB System and on Atlas emulsifiers.
143E Atlas Powder Co.

Surfactants, Nonionic.....Carbide has developed a large group of Tergitol nonionics. Each one is carefully designed for maximum efficiency under specific conditions of performance. Product samples & Bul. F-5900.
143F Carbide & Carbon Chem.

Surfactants, Nonionic.....Numerous uses: insecticide concentrates; plastisol and organisol stabilizers; pharmaceutical and cosmetic emulsifiers; latex paint leveling and defoaming agents; etc. Details in Glyco Catalog.
143G Glyco Products Co.

Tar Bases.....Used importantly in such fields as drugs, dyestuffs, textiles, insecticides, adhesives, metal cleaning, their potentialities are almost unlimited. 96 p. covers uses, properties, test methods, etc.
143H Barrett Div.

Tetraaryloxysilane.....Illustrated, 17 p. describes Orsil AF-1. Includes data on physical properties, corrosion characteristics, physiological properties, heat transfer properties, etc. Bulletin 19.
143I Oronite Chem. Co.

Tetrahydrofuran.....A powerful solvent for polyvinyl chlorides and other hard-to-dissolve plastic materials can also be used as a chemical intermediate. Write to manufacturer for bulletin.
143J E. I. du Pont de Nemours.

Thickeners, Synthetic.....Synthetic thickening agents, which are suggested as replacements for natural thickeners in a broad range of industrial applications, are the subject of a 28 p. booklet available upon request.
143K Monsanto Chem. Co.

Thixcin.....A fine white powder that swells in aliphatic solvents & most oil-based compositions to form a loosely knit lattice structure of tremendous supporting power. Request technical data and product sample.
143L Baker Castor Oil Co.

Thread Compounds.....Big "D" Thread Dope (90% atomized metallic lead, 10% vehicle, with wonder Silicones added for plus performance) excels wherever thread compound is needed. Request sample and Brochure.
143M C. H. Dragert Co.

Titanium Dioxide.....The Story of Unitane Titanium Dioxide" prepared for the dedication of titanium dioxide plant at Savannah, Georgia, in December. A unique pigment that has raised the quality of objects around us.
143N American Cyanamid Co.

Toluene.....Industries using new high purity Sun Toluene report increased plant efficiency—better quality in their finished products—increased life of many of their catalysts. Technical Bulletin No. 27.
143O Sun Oil Co.

Tolylene Di-Isocyanate.....Nacconate 65—isomeric mixture of 65% 2,4-tolylene di-isocyanate and 35% 2,6-tolylene di-isocyanate. Product samples, detailed technical information and quotations upon request.
143P National Aniline Div.

Tolylene Diisocyanateisomeric Mixture.....Offers technical information on Nacconate 80. Describes: composition; typical analysis; chemical properties and suggested uses; physiological properties; etc. Bulletin I-17A.
143Q National Aniline Div.

Toners, Tungstate & Molybdate.....Releases a report on the preparation and testing of seven toners from each of ten different dyes using phosphomolybdic, phosphotungstic and phosphotungstic-molybdic acids.
143R Climax Molybdenum Co.

Tributyl Phosphate.....In rubber base paints, effectiveness of tributyl phosphate as an anti-foam agent has been proved by manufacturers who now use it in their formulations. Technical literature & sample.
143S Ohio-Apex Div.

Trimethylolethane.....TME — Heyden's Trimethylolethane—for alkyds, polyesters, isocyanate resins, and drying oils. TME is shipped in handy 50 lb. multi-wall bags. Technical Bulletin and samples on request.
143T Heyden Chem. Corp.

Triols.....Technical data on Hexanetriol-1, 2, 6 & Triol-230, stable, high-boiling liquids containing three hydroxyl groups. Includes physical properties, net container contents & solubility data. Book F-7779.
143U Carbide & Carbon Chem.

Tripentaerythritol, Technical.....Offers a Technical Bulletin on "Tripentek," Heyden's tripentaerythritol technical. Includes data on properties, solubility, uses, containers, handling, etc. Request Bulletin PE 3-55.
143V Heyden Chem. Corp.

Tris (Hydroxymethyl) Aminomethane.....Investigate highly reactive nitroparaffin ("Tris Amino") derivative—the only tri-hydroxy molecule commercially available having a primary amine group. Data & samples.
143W Commercial Solvents Corp.

Urea, Crystal.....Purity and uniformity make it ideal for use in a large number of products and processes. Furnishes full details—specifications, chemical and physical properties, suggested uses, etc.
143X E. I. du Pont de Nemours.

Urea Peroxide.....Company makes available upon request a literature reference describing line of urea peroxide. Included is information on chemical and physical properties, uses. Product Bulletin No. 10.
127aaa •Becco Chem. Div.

Vermiculite.....Remarkable new vehicle that turns liquid chemicals into free flowing solids . . . has 27,500,000 particles per lb. Request copy of the new Data Book on Vermiculite's properties & uses in industry.
143Y Zonolite Co.

N-Vinyl-2-Pyrrolidone.....Will copolymerize with almost all vinyl monomers. Permits modification of many properties in existing homopolymers. Request technical information, price schedules, and product samples.
143Z General Aniline & Film Corp.

Vitamin B12.....A dark red, crystalline powder; practically odorless & tasteless. Uses—as anti-anemia factor in treatment of pernicious anemia, tropical & non-tropical sprue, etc. Technical Information Sheet.
143AA Mallinckrodt Chem. Wks.

Waxes.....Manufacturers of rubbing compounds, waxes, lamb wool products, automotive finishing & refinishing specialties offer fully illustrated folder covering numerous advantages of Mirroriz auto paste wax.
143BB Kammel Products Corp.

Waxes.....Company announces the release of a new reference entitled, "Wax Facts," which contains valuable market information, ideas for formulation & general news relating to waxes & allied materials.
143CC Dura Commodities Corp.

Waxes, Petroleum.....Cardis One is one of the many new waxes developed by Warwick to provide manufacturers with formulations that answer the growing consumer demand for wax-rich polishes. Data & samples.
143DD Warwick Wax Co.

Waxes, Polyethylene.....New illustrated 8 p. Brochure describes in detail the typical properties, applications and compatibility characteristics of Eastman's new polyethylene waxes, Epolene "E" and Epolene "N."
143EE Eastman Chem. Products.

Waxes, Synthetic.....Reference describes prevention of solder oxidation with a synthetic wax, "Glycowax S932" . . . acts as a coating for solder, preventing scum formation & oxidation. Bulletin & product samples.
143FF Glyco Products Co.

Waxes, Synthetic.....Acrawax C synthetic wax (M.P. 140-143°C) for: lubricating plastics & elastomers; raising melting points of waxes, asphalt, etc.; waterproofing electrical insulation; etc. See Catalog.
143GG Glyco Products Co.

Wetting Agents.....24 p. booklet covers: current industrial status of wetting agents; Oronite wetting agent (typical analysis, surface & interfacial tension, wetting coefficient, etc.); industrial applications.
143HH Oronite Chem. Co.

Zinc Formate, Crystal, Purified.....Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. Ask for No. DA-44441.
143II Baker & Adamson.

Zinc Nitrate, Technical.....Baker Zinc Nitrate, Tech. in thin flat flakes . . . faster dissolving, uniform purity—lot after lot, controlled water of hydration, easier to handle. Request samples & prices.
143JJ J. T. Baker Chem. Co.

Zinc Stearate USP Grade A Powder.....An ingredient contributing smoothness, unctuousness and covering power to pharmaceutical and cosmetic preparations. Details in Technical Information Sheet.
143KK Mallinckrodt Chem. Wks.

Zirconium.....Numerous important uses—acid-resistant materials, corrosion-resistant materials, electronic getter, scavenger, etc. Furnishes pertinent technical data on company product line in Bulletin 700.
143LL Metal Hydrides.

Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 71).

today's TREND is toward

"Packaged" FLUID MIXERS



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You can now solve any fluid mixing problem with Philadelphia "packaged" Fluid Mixers . . . eliminating the usual expensive, complicated equipment. By standardizing on simple, easily maintained Philadelphia Fluid Mixers, you get these proven advantages!

Completely integrated "packaged" service. Philadelphia designs, and manufactures in one plant, every major component of these fluid mixers, except motors and bearings. As a result, through this one centrally controlled, thoroughly responsible source, you can obtain the complete solution to your fluid mixing problems.

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Full Range of Sizes. Choose the Philadelphia Mixer best suited to your needs. Six basic models from 1 to 100 HP. Keep in mind that Philadelphia Gear can build to sizes and specifications larger than usually available.

Unitary Mechanical Shaft Seal. Positive leak-proof shaft seal for closed tank agitation gives long maintenance-free service life. When necessary, it can be installed and replaced in minutes with only a wrench. No special lifting equipment is needed.

Heavy Duty Shafts & Bearings. Extra large heavy-duty output shafting results in less shaft deflection at stuffing box or mechanical seal, steady operation of overhung mixer shafts. All bearings are oversize, with a generous service factor.

Doesn't it stand to reason that these advantages add up to a bigger, better-designed, more powerful unit for your money? It won't cost you a cent to find out more about the new Philadelphia "packaged" Fluid Mixers. Just write for Bulletin A-156.

philadelphia mixers

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1956 INVENTORY

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410 ITEMS . . . CE's exclusive inventory of what's new in equipment . . . the year's most important developments . . . screened for their value to chemical engineers . . . pertinent facts only.

THIS is CE's third annual inventory of major new developments in equipment for the chemical process industries. It provides a single quick-reading map of 410 new or newsworthy items carefully screened and selected by CE editors for publication in the issues of August 1955—July 1956. It stresses equipment that can be used in commercial or large-scale processing units. For more information on any item, write its code number on one of the Reader Service postcards, then mail to us.

1956

New Equipment and Accessories

INVENTORY

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• Electrical Equipment

Control, Motor

Automatic functions. (146A)

. . . Priced below $200, the Loadtrol can control remote electric motors fully and automatically. It will function on motors from 5 to 150 hp., 220 or 440 volts.—*Rietz Mfg. Co., Santa Rosa, Calif.*

Controller, Safety

Cuts-off overloaded electrical conveyor systems. (146B)

. . . This electro-mechanical safety controller instantly and automatically shuts off electrical conveyor systems at any predetermined load setting. Consequently it eliminates the need for shear pins, slip clutches and other mechanical safety devices often used to prevent damaging jam-ups from abnormal loading.—*Tipp Mfg. Co., Tipp City, Ohio.*

Cutout, Thermal

Protects dry fluid drive against continuous overload. (146C)

. . . . Flexidyne dry fluid drive now can be protected against overheating by a thermal cutout device. Inherently, the drive protects against instantaneous mechanical overload. Now, if an overload causes prolonged slipping, heating Flexidyne, the thermal cutout trips the switch to cut off power and give alarm.—*Dodge Mfg. Corp., Mishawaka, Ind.*

Drive, Adjustable Speed

Controls within plus or minus 2%. (146D)

. . . The new Ampli-Speed drive can be coupled or belted to a motor to control speed of fans, compressors and of centrifugal pumps within ±2%. Drives are available for motor speeds of 870, 1,150, 1,750 rpm.—*Electric Machinery Mfg. Co., Minneapolis, Minn.*

Drive, Right-Angle Gear

Line grows bigger and better. (146E)

. . . Line of right-angle gear drives has been expanded to include units up to 150 hp. In extending in the opposite direction, it has spawned an eleven horsepower baby.—*U. S. Electrical Motors, Inc., Los Angeles, Calif.*

Drive, Variable Speed

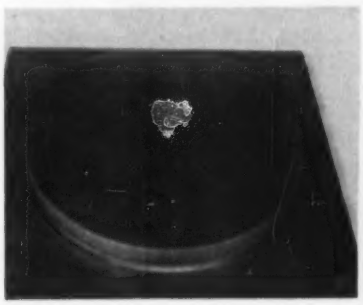
Features all-around control and flexibility. (147A)

. . . Tagged the Selectron, this new variable-speed drive brings to the market a unit packed with desirable features. Its speed range sweeps from 22 to 1 to 60 to 1. A patented load compensating circuit is incorporated in the unit to afford close speed regulation, rapid speed response with stepless control. A tachometer feedback controls the speed within 0.0025%.—*General Dynamics Corp., Bayonne, N. J.*

Electrode, Metal Cutting

Gas-shielded. (147B)

. . . A new technique designed for cutting non-ferrous metals such as aluminum is of interest to chemical engineers because it may make possible fabrication of a wider range of process equipment. For the first time non-ferrous metals can be cut as easily as is steel with oxygen cutting. The Heliarc method of cutting utilizes a gas-shielded, constricted arc with extremely high temperature and high velocity between a tungsten electrode and the piece to be cut.—*Linde Air Products Co., New York, N. Y.*



Enclosure, Pushbutton

Seals out oil, foreign matter. (147C)

. . . For use where liquids and dirt are a problem, an oil-tight pushbutton enclosure fabricated from 14 gage steel is now available. Costing much less than the conventional cast aluminum boxes, these enclosures are of all-welded construction.—*Hoffman Engineering Corp., Anoka, Minn.*

Engine, Compressor

Designed to deliver increased power. (147D)

. . . The SUTC gas-engine compressor with Turbo-Uniflo attains increased power by exhaust-powered turbocharging from startup through full load. System eliminates need for power-draining extra drive on supercharger. Pulse-generator ignition and chain-driven timing system gives high efficiency, less maintenance.—*Worthington Corp., Harrison, N. J.*

Engine, Heavy-Duty

For continuous use in chemical plants. (147E)

. . . Now available in ratings up to 1,400 hp. is the completely new W9 medium-speed heavy-duty engine. It is extremely compact with a low weight per horsepower ratio, yet retrains great structural strength. Engine is adaptable for both stationary and portable use. It operates on low-cost fuels such as residual, crude, and distillate oils; natural, sewage, propane or manufactured gas.—*Worthington Corp., Harrison, N. J.*

Gearmotor

New sizes deliver more hp. per lb. (147F)

. . . In keeping with the new NEMA motor sizes, a new line of Gearmotors and Motogears delivers more horsepower per pound. Units offer function design without unnecessary size and weight. Output speeds range from 280 down to 6 rpm.—*Link-Belt Co., Chicago, Ill.*

Light, Emergency

Explosion-proof, works instantly, automatically. (147G)

. . . Available for the first time anywhere, an explosion-proof lighting unit provides emergency illumination. It works instantly and automatically whenever the regular source of power fails. It can furnish about 7½ hr. of continuous light.—*Electric Cord Co., New York, N. Y.*

Motors

New line of d.c. equipment utilizes feedback control principle. (147H)

. . . Use of d.c. electric drives to vary speed precisely gets an undenied boost from a new Kinamatic line of industrial d.c. motors and generators. New line features exceptional versatility in contrast to older designs. Easy maintenance, split-second response, improved performance and attractive appearance are other benefits. Kinamatic equipment is reported to be the first complete line built to the latest NEMA standards for future design. Available immediately are all motor ratings from one to 150 hp. and all generator ratings from ¾ to 100 kw.—*General Electric Co., Erie, Pa.*

Motor, Chemical

Self-cleaning for reduced maintenance. (147I)

. . . Outstanding feature of the new Marathon chemical motor is the self-cleaning effect of the air stream above the motor. Air is blown along ribs on the frame that increase dissipation of heat. There are no ducts to clog. Sticky or oily dirt can be removed from between the ribs without stopping the motor.—*Marathon Electric Mfg. Corp., Wausau, Wis.*

Motors, Drip-Proof

Cooler running. (148A)

. . . Open drip-proof motors run cooler because an extra aluminum turbine fan is mounted on motor shaft. A four-fold increase in air circulation is the result. In addition, the internal design and construction transfer heat vary rapidly.—*ACEC Electric Corp., New York, N. Y.*

Motors, Enclosed

Brushes withstand silicone vapors. (148B)

. . . A new type of carbon motor brush enables use of silicone insulating components in totally enclosed d.c. motors and generators. Silicones are needed to withstand high operating temperatures. Formerly, they could not be used because concentration of silicone vapor inside the enclosure caused brushes to dust away rapidly.—*National Carbon Co., New York, N. Y.*

Motors, Explosion-Proof

Aimed at three top hazards. (148C)

. . . A complete line of explosion-proof motors meet underwriters' requirements for the three commonest hazard locations; gaseous, explosive dust and explosive gain dust. This means that the motors will not trigger destruction in gasoline refineries, paint and varnish plants, dry cleaning plants, etc. The motors are available in gear, standard and variable speed models.—*Sterling Electric Motors, Inc., Los Angeles, Calif.*

Motors, Fan-Cooled

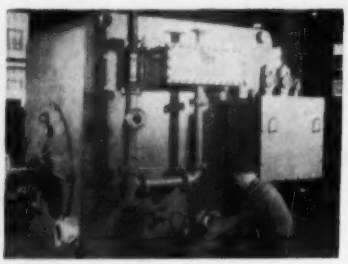
Totally enclosed. (148D)

. . . Rerated totally enclosed fan cooled motor in ½ to 5 hp. sizes meets all NEMA requirements. Also features practically indestructible aluminum rotator, six-layer insulation of stator windings and fan that ventilates well rotating in either direction. —*Century Electric Co., St. Louis, Mo.*

Motor, Gas-Filled

For safe operation in hazardous areas. (148E)

. . . Available in a wide range of ratings a new line of inert gas-filled motors provide safe operation in hazardous gas-contaminated areas. They are currently being supplied to refineries to drive high-speed centrifugal compressors. Under positive pressure, the nonexplosive gas inside the motor keeps out volatile ambient gases that could cause an explosion.—*Allis-Chalmers Mfg. Co., General Machinery Div., Milwaukee 1, Wis.*



Motors, Rerated

Plastic insulation. (148F)

. . . Rerated line of TEFC motors, 7½ to 100 hp., features six-layer insulation using plastic insulation and plastic-coated wire. Rib-type cast iron frame. Fan rotates in either direction. —*Century Electric Co., St. Louis, Mo.*

Motor, Sealed

For difficult ambient conditions. (148G)

. . . Moisture-, dust- and explosion-proof qualities have been built into a recently announced electric motor by enclosing the entire motor within a steel case filled with mineral oil. Motor is designed for mechanical drives and comes in wide selection of models and sizes to cover the 20-450 hp. range. —*Byron Jackson Pumps, Los Angeles, Calif.*

Motors, Silicone-Protected

Resist salt air. (148H)

. . . Silicone-type materials protect these pump drive motors against salt air and moisture in a Gulf-Coast chemical plant. Motor has a number of advantages over TEFC motor including lower cost, easier maintenance, and greater resistance to internal corrosion. Armature coils insulated with silicone rubbers, tapes, varnishes. Metal protected by baked-on silicone finishes.—*Electric Machinery Mfg. Co., Minneapolis, Minn.*

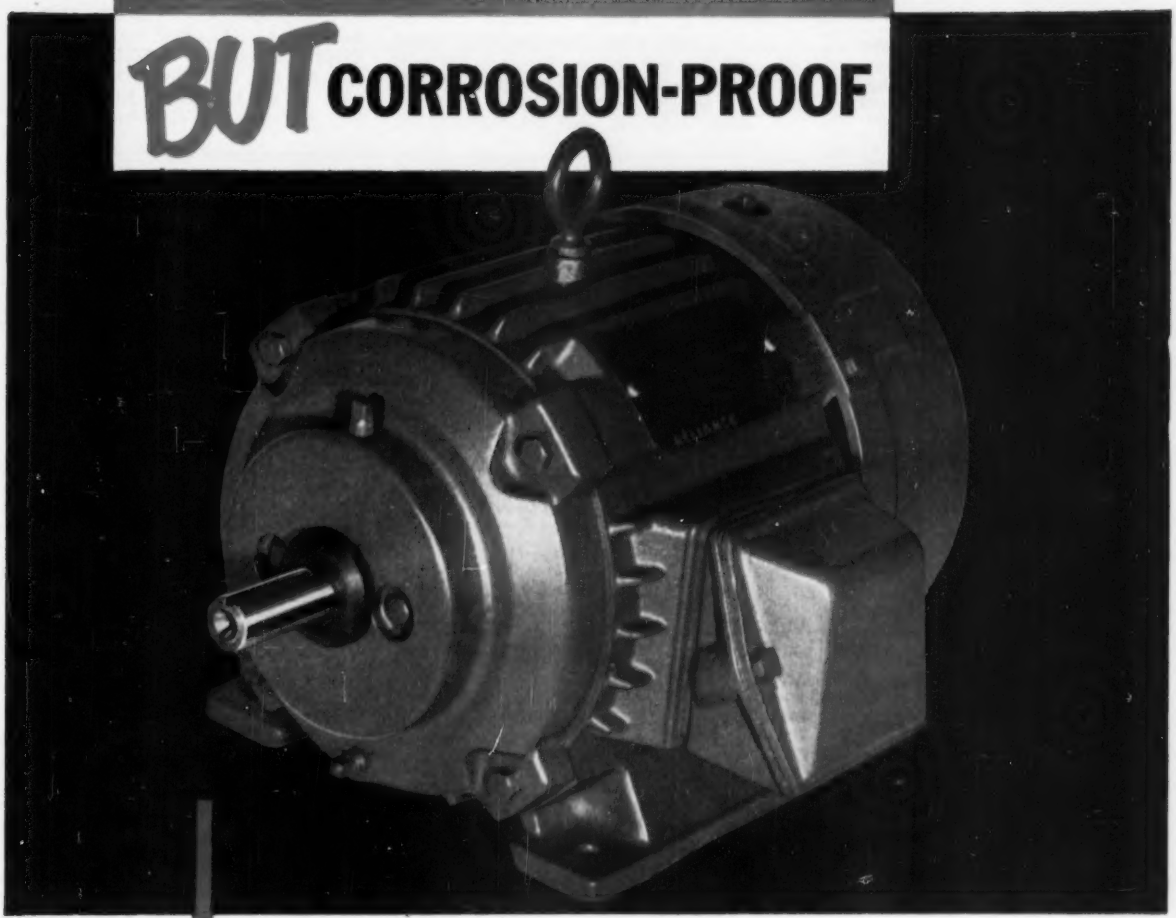
Motor, Synchronous

Revs up as induction motor, rises to synchronous speed. (148I)

. . . Combining design features of induction and synchronous motors, this hybrid Synduction motor provides advantages of both. It answers the need for a constant speed motor (synchronous motor characteristic) in sizes below 40 hp. with low first cost, rugged mechanical construction and simplicity of maintenance (induction motor characteristic). Available in ratings from ¼ to 40 hp., manufacturer expects to tailor each unit to its particular job. —*Allis-Chalmers Mfg. Co., Milwaukee, Wis.*

Not Just CORROSION-RESISTANT

BUT CORROSION-PROOF



Corrosion resistance is not enough to stop acids or alkalies from chewing up a motor in a hurry. That is why the wise engineer selects Reliance Corrosion-Proof Motors for corrosive service.

These motors are built to withstand the onslaught of destructive chemicals for years. Housings are made of virtually indestructible cast iron. Exterior contours are designed to slough off liquids—no nooks and crannies to retain corrosive elements. Enclosures are sealed to prevent any leakage . . . Metermatic lubrication systems provide complete protection against burned out bearings and contaminated lubricants.

Anyway you look at them, Reliance Corrosion-Proof Motors can take it—and you're not limited in the choice of motors either. A complete line of a-c. motors, 1 thru 300 hp., is available in all mountings, frequencies and voltages.

Why not call your Reliance representative today and get all the details.

B-1506

RELIANCE *Totally-Protected* MOTORS

RELIANCE ELECTRIC AND ENGINEERING CO.

DEPT. 139A CLEVELAND 10, OHIO • CANADIAN DIVISION: WELLAND, ONTARIO

Sales Offices and Distributors in Principal Cities

Motor, Variable Speed

For wide range of applications. (150A)

. . . Now being manufactured under an English license the N-S variable speed a.c. motor eliminates need for mechanical variable-speed transmission. Efficient, safe electric controls have been substituted for mechanical drives. Models are available from 0.5 to 1,000 hp. with speed ranges from 30:1 to 1.5:1.—*Bogue Electric Mfg. Co., Paterson, N. J.*

Pulley, Magnetic

Two-coil design produces better flux pattern. (150B)

. . . On many conveyor operations the two-coil electro-magnetic pulley removes more tramp iron than larger units. Many needs can be handled by a two-coil pulley of smaller diameter than a three-coil pulley with reduced equipment and power costs. The new electro-magnetic pulley is available in a variety of widths. And it is also available in diameters from 12 to 60 in.—*Stearns Magnetic, Inc., Milwaukee, Wis.*

Pulley, Reduction

Lessens need for auxiliary gear reducers. (150C)

. . . Greater compactness, lower cost, improved performance and simplicity of installation are advantages offered by a new reduction pulley. Unit looks like an ordinary V-belt pulley, yet has built-in gear reduction ranging from 7:1 to 700:1 in standard units and up to 8,000:1 available on special order. —*Hart Reduction Pulley Co., Waukesha, Wis.*

Rectifier, Germanium

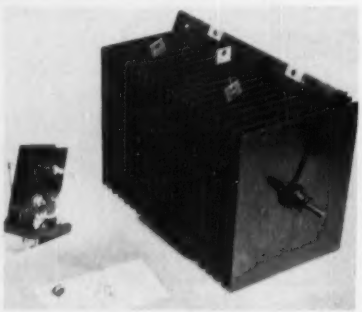
Offers flexible application. (150D)

. . . This new 50 kw. heavy duty germanium rectifier is furnished in a floor standing cabinet for space saving compactness. Since it may be connected either in parallel or series, or parallel and series, the rectifier is suitable for various direct current voltages and amperages exceeding those of a single unit.—*Perkin Engineering Corp., El Segundo, Calif.*

Rectifier, Power

New level of performance via silicon. (150E)

. . . A tiny new electronic device of extremely pure silicon shows promise of reducing power costs on a large scale in many industries. It converts alternating current to direct current to get 5,000 times more current than same size conventional rectifiers. Silicon rectifiers are expected to have an almost unlimited life span; will be able to operate continuously up to 400 F. Efficiency is claimed more than 98% of the theoretical limit.—*Bell Telephone Laboratories, New York, N. Y.*



Welding Process

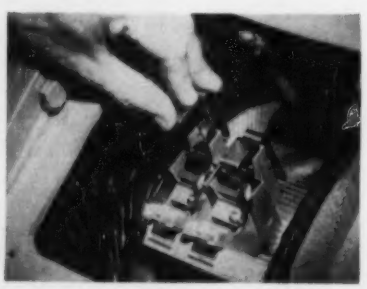
Boosts rate of metal deposit. (150F)

. . . A five-fold gain in deposit rate of weld metal at half the power cost is posted for a new automatic submerged-arc welding process. Cost of the entire system is expected to run no higher than for present automatic welding. What makes the new system unique is the use of resistance to preheat the electrode almost to its melting point before it enters the arc. Practically all the energy absorbed by the electrode at the arc supplied heat of fusion for metal melting. A special guiding device keeps the weld head and arc trued up with work. Beads are deposited too fast for accurate manual guiding.— *Babcock & Wilcox Co., New York* 17, *N. Y.*

X-Ray System, TV

What x-ray reveals is shown remotely on TV. (150G)

. . . Considerably lower cost for industrial x-ray inspection with visual indication is expected for a new television x-ray system or x-ray camera tube, the system eliminates the need for combinations of fluorescent screens, costly lens, phototubes and studio camera tubes found in other TV x-ray intensification systems. While the system has been operating in industrial installations for more than a year, it is still considered to be in the development stage.—*General Electric Co., Milwaukee, Wis.*



TECHNICAL LITERATURE

Batteries, Flat-Plate.....Folder describes and illustrates line of Exide Powerclad Flat-Plate Batteries. Feature: high power; electrical efficiency and dependability; low operating costs; etc. Form No. 5785-1-56-AO.
151A Electric Storage Batery Co.

Capacitors.....Improve voltage regulation, boost plant circuit capacity, release transformer capacity & make it possible to get lower power rates thru power factor improvement. Booklets B-3966, DB 49-110-1.
151B Westinghouse Elec. Corp.

Changers, Speed.....Describes operating advantages of "Vari-Pitch" speed changers. Includes arrangement diagrams, selection table showing recommended unit size for standard motors, etc. Bulletin 20B6013D.
151C Allis-Chalmers Mfg. Co.

Conductors, Bus.....There's an Alcoa aluminum bus conductor engineered to fit every bus application. For details, request your copy of "Service Records of Alcoa Aluminum Bus Conductor Installations."
151D Aluminum Co. of America.

Connectors, Electrical.....Company announces availability of a fully illustrated Catalog with complete details of compact, all-weather, versatile connectors, designed to withstand moisture, acid, fumes & oil.
151E Titeflex, Inc.

Control Devices.....Illustrated, 68 p. contains photos, wiring diagrams, book prices, dimensions on motor starters, contactors, relays, solenoids, switches, push buttons, etc. Bulletin No. GEC-1260A.
151F General Elec. Co.

Controllers, Current.....Describes the Model EB controller, showing operating features, specifications, dimensions, & illustrating typical examples of the wide range of applications. Bulletin No. EB-1.
151G Conoflow Corp.

Drives.....The Reeves automatic motor-drive is the economical answer to any continuous process requiring accurate control of heat, pressure, weight & flow, etc. Complete information in Bulletin CE20-M542.
151H Reeves Pulley Co.

Drives.....Offers a bulletin on the operation and maintenance of the Pfaudler PW drive for agitators used in chemical processing. Gives tips on motor installation & maintenance. See Bulletin No. 931.
151I Pfaudler Co.

Drives.....Illustrated booklet, "How to Care for Jr.," just published, describes the simple, but comprehensive program available to keep Reliance V*S Jr. Drives in operation at peak efficiency. Bulletin H-2104.
151J Reliance Elec. & Engrg. Co.

Drives, Adustable-Speed.....Covers general-purpose, full-wave, Thy-mo-trol adjustable-speed drive. Cites in detail the drive's simplicity of operation and economy. Request fully illustrated Bulletin GEA-6234.
151K General Elec. Co.

Drives, Adjustable Speed.....New illustrated folder describes the "Ampli-Speed" Magnetic Drive . . . which provides precise, adjustable speed power for a wide range of applications. Bulletin 4400-PRD-229.
151L Electric Machy. Mfg. Co.

Drives, Variable Speed.....Describes the Pfaudler PW drive . . . a variable speed drive for agitator speeds from 60 to 340 rpm. For complete information on this versatile new drive, request Bulletin No. 923.
151M Pfaudler Co.

Drives, Variable Speed.....The U. S. Varidyne system is extremely easy to install & affords a practically unlimited selection of Varidyne motor types. For more complete information, request Bulletin F-1910.
151N U. S. Elecl. Motors.

Electrical Equipment.....Installs easily, works correctly, and stays on the job for years without attention. More than 15,000 items are listed in the Condulet Catalog—fittings, plugs, etc. Request your copy.
151O Crouse-Hinds Co.

Electrification, Crane.....Gives drawings & data for ordering aluminum Inverted-Y Conductors, supports & collectors for any normal application requiring currents in amounts of 300-1000 amperes. Catalog 2021-A.
151P Cleveland Crane & Engrg.

Electronic Equipment.....Profusely illustrated product reference contains detailed technical information on Langevin transformers and reactors, broadcast amplifiers, power supplies, special equipment, etc. 8 p.
151Q Langevin Mfg. Corp.

Enclosures, Pushbutton.....Describes the new Hoffman oil tight pushbutton enclosures. Includes: application; types available; mounting; construction; back mounted contact blocks; finish; specifications; etc.
151R Hoffman Engrg. Corp.

Fixtures.....Appleton vented fixtures offer: "Flame-tight" contact chamber; "Full-circle" venting; "Interchangeable" unilet body; Conversion to different wattages in just 58 seconds. Request complete information.
151S Appleton Electric Co.

Fuses.....Describes current-limiting fuses rated 250 & 600 volts in sizes from 6 to 200 amperes. Includes specifications, curves of current-limiting characteristics, etc. Request illustrated Bulletin GEA-6319.
151T General Elec. Co.

Fuses.....Describes Great Western ferrule type renewable & non-renewable fuses in a complete range of capacities for industrial purposes . . . glass top plug fuses for commercial & household use. Illustrated Catalog.
151U Titeflex, Inc.

Generating Plants.....New 8 p. catalog is designed to make it easy for the reader to select the proper type of generating plant and necessary accessories with a minimum of effort. Catalog A-428.
151V D. W. Onan & Sons.

Illuminators, Gage.....Gage illuminators provide even, no glare, low cost lighting for gages, rotameters, etc. Illuminators use the principle of solid wedge lighting to give you clear, even light. Data Unit.
151W Jerguson Gage & Valve Co.

Lighting Equipment, Emergency.....Makes available complete information describing the Dynaseal power bloc (Bulletin No. A-46) and Dynaseal lifetime emergency lighting units (Bulletin No. A-71).
151X Dynaseal Lighting Corp.

Motor Bases.....New V-belt drive motor base automatically compensates for belt stress and tension. This substantially reduces wear on both belts and bearings. Request information, including Bulletin 1300.
151Y Lovejoy Flexible Coupling.

Motor Control.....Describes high-voltage, current-limiting fused starters for co-ordinated control of squirrel-cage, synchronous, wound-rotor and multi-speed motors. Request 12 p. illustrated Bulletin GEA-6331.
161Z General Elec. Co.

Motor Starter-Circuit Breakers.....Design, construction & performance of circuit breaker & motor starter Unilets give maximum safety & unparalleled ease of wiring, installation, maintenance. Bulletin BH.
151AA Appleton Elec. Co.

Motor Units.....Rugged in construction and simple in design, Chapman Motor Units insure longer life with fewer repairs. Smooth, accurate and trouble free operation. For details, request Catalog 51.
151BB Chapman Valve Mfg. Co.

Motors.....“Motors in Industry” describes & pictures recent applications of electric drives in such operations as petroleum transfer, catalytic cracking, thermal reforming & chemical treatment. Vol. 2 No. 9.
151CC ACEC Elec. Corp.

Motors.....Here is extra motor value—double-shielded bearing . . . large grease reservoirs . . . bolted-on bearing cap . . . labyrinth seals. For complete details on bearing design, request Bulletin 51B7225.
151DD Allis-Chalmers Mfg. Co.

Motors.....Feature extra motor value; double-shielded bearing; large grease reservoirs; bolted-on bearing cap; labyrinth seals. For complete information on maintenance-cutting design, see Bulletin 51B7286.
151EE Allis-Chalmers Mfg. Co.

Motors.....Data book shows how & why the New Standard, smaller motors outperform the larger, heavier ones. Weight savings to 40% plus space savings. For complete information request Bulletin No. 6-1P1.
151FF Century Electric Co.

Motors.....Choosing a Century motor, Performance-Rated to fit your particular job, is merely a matter of minutes when you use company's handy Application Guide. For your free copy, request Form No. 1700.
151GG Century Elec. Co.

Motors.....Covers new series of totally-enclosed & explosion-proof motors. Motors (Types J & E) engineered for operation where dangerous fumes, dusts, combustible materials, etc. are prevalent. Bulletin No. 1879.
151HH U. S. Elec. Motors.

Motors.....Describes U. S. Motors—a brief presentation of the complete line. Includes data on: U. S. Uniclosed motors; U. S. Varidrive motors; U. S. Syncrogear motors; U. S. Verticlosed motors; etc. Form F-1878.
151II U. S. Elec. Motors.

Motors.....Howell Series 100 motors are smaller, lighter and cooler running. New reference shows clearly the important advances in design that have been built into these new rerated motors. Bulletin N-100-R.
151JJ Howell Elec. Motors Co.

Motors.....Company furnishes descriptive information on new Reliance motors and Metermatic . . . the “Automatic Grease Monkey.” Find out how to eliminate burned out bearings. Bulletin No. A-2406.
151KK Reliance Elec. & Engrg.

Need some equipment?

Then you'll find this issue's Inventory of New Equipment right up your alley. It's a digest of the past year's major new developments in process equipment, the first complete roundup of its kind. You'll find it a handy tool for years to come (p. 145).

TECHNICAL LITERATURE

Motors—

Wire & Cable, Electrical

Motors.....Howell part winding motors offer low cost 2 or 3-step starting. For full information—current & torque data for horsepowers from 5 to 200 hp as well as typical installation data—see Bulletin No. PW-1.
152A Howell Elec. Motors Co.

Motors.....Announces new line of general-purpose ball bearings polyphase motors in rerated NEMA frame sizes 182 thru 326. Suitable for indoor or outdoor use. Describes construction features in Bulletin No. MU-202.
152B Wagner Elec. Corp.

Motors.....Describes newly designed standard & explosion-proof enclosed motors, featuring corrosion-resistant cast iron frames, improved winding insulation & heavy duty ball bearings. Bulletin No. MU-203 & MU-132.
152C Wagner Elec. Corp.

Motors.....Motors to power your pumps, agitators, compressors and blowers. Offers diversified line of standard motors, from 1/6 to 500 hp, readily adapted to your requirements. For full details—Bulletin MU-185.
152D Wagner Elec. Corp.

Motors, Air.....A new Model 6AM rotary air motor of ? hp, weighing only 17 lbs., enlarges Gast line to 5 sizes, ranging from 1/20 to 4 hp. Performance curves and data contained in Bulletin No. 855-10.
152E Gast Mfg. Corp.

Motors, Aircraft.....Fully illustrated, 8 p. describes U. S. Aircraft Motors . . . high frequency induction type. Features: alternating current; 3-phase, high frequency; 400 cycles; ¼ hp to 16 hp etc. Form F-1535.
152F U. S. Elecl. Motors.

Motors, D-C.....Issues 12 p. publication on fractional hp direct-current motors & equipment. Covers full line for direct application & built-in use. Includes features, ratings, specifications, etc. Ref. No. GEA-6068.
152G General Elec. Co.

Motors, Fan-Cooled.....Totally-enclosed, fan-cooled motors . . . for chemical plant applications. Feature long life, minimized maintenance and top efficiency. Details in Chemical Motor Bulletin No. CE-3379.
152H Diehl Mfg. Co.

Motors, Flat-Type.....Full horsepower in less space, reduced weight, standard radial construction, easy to disassemble and reassemble, no precision alignments or complicated air-gap adjustments. Bulletin CE-3461.
152I Diehl Mfg. Co.

Motors, Gear.....Describes completely new line of Gearmotors & Motogears. Includes selection data together with features of construction, load classifications, dimension tables, etc. Illustrated, 28 p. Book 2447.
152J Link-Belt Co.

Motors, Gear.....The U. S. Syncrogear Motor is completely described and illustrated in a new 16 p. full-color brochure. Includes: normalized castings, friction-free oil seal & genuine pyramidal design.
152K U. S. Elecl. Motors.

Motors, Gear.....''Reduce Speed'' describes new line of Reliance Gearmotors . . . the first line of gearmotors available incorporating new NEMA motors and completely redesigned gearheads. Bulletin E-2408.
152L Reliance Elec. & Engrg.

Motors & Generators.....Information on the G-E Kinamatic Motors & Generators includes: application; ratings & frames; performance; construction; features; dimensions; etc. Spec. Sheets GEC-1372 & GEC-1373.
152M General Elec. Co.

Motors & Generators.....A complete line of motors and generators designed to meet product requirements is illustrated in a new available literature reference. Request ''A Company With A Future Invites You.''
152N Marathon Elec. Mfg. Corp.

Motors, Pump.....Describes company's latest line of vertical hollow shaft pump motors . . . designed and built for exacting demands of deep-well vertical turbine pumping. Includes design and construction features.
152O ACEC Elec. Corp.

Motors, Pump.....16 p. describes hollow shaft Verticlosed grease- and oil-lubricated motors in sizes from 1½ up to 400 hp; also single phase designs up to 7½ hp, & totally-enclosed types up to 150 hp. Bulletin 1903.
152P U. S. Elecl. Motors.

Motors, Totally-Enclosed.....For dirty or corrosive location or for outdoor operation in all kinds of weather. Available in ratings on frames larger than NEMA 505 up to 3000 horsepower. Data in Bulletin 51B7149.
152Q Allis-Chalmers Mfg. Co.

Motors, Totally-Enclosed.....Precision-engineered & precision-built to new NEMA standards—ideally suited to ''air-over-motor'' applications where moisture, fumes, dust, etc. are a problem. Bulletin No. CE-3304.
152R Diehl Mfg. Co.

Motors, Varidrive.....With a U. S. Varidrive motor you can get instantly all the speeds needed for every operating condition. A complete, informative full color reference is contained in Booklet No. 1797.
152S U. S. Elecl. Motors.

Motors, Vertical.....Illustrated, 12 p. emphasizes reduced maintenance costs & simplified lubrication of new motor —shielded (dripproof), hollow-shaft, high-thrust type, ranging from 7½ to 500 hp. Bulletin GEA-6280.
152T General Elec. Co.

Motors, Weather-Protected.....Announces the publication of a new reference describing in detail the construction features of Allis-Chalmers weather-protected motors for outdoor installation. Bulletin No. 05B7874B.
152U Allis-Chalmers Mfg. Co.

Rectifiers.....A new revised edition of Bart-Messing's ''guide'' to power conversion rectifiers is now available. Includes photographs of all sizes & styles of rectifiers. ''A Guide to Better Plating Power.''
152V Bart-Messing Corp.

Rectifiers.....Illustrates & describes standard models of Sel-Rex Germanium Rectifiers from 50 to 50,000 amperes capacity, in either forced air or completely sealed water cooled design. Request Reference No. GR3105.
152W Bart-Messing Corp.

Relays, Electrical.....Describes the Loadtrol . . . an inexpensive electrical relay. Includes data on: construction; dimensions; capacity; regulation; applications; typical installations; etc. Bulletin No. 240.
152X Technalectric Co.

Relays, Precision.....New bulletin gives features, description, design specifications, operating specifications and ordering information for precision relays used in high & low limit action. Bulletin MRM240.
152Y Manning, Maxwell & Moore.

Relays, Time Delay.....New illustrated product literature describes the models NEL Agastat and NEH Agastat, two recently developed time delay relays. Operation of each model covered in detail. Bulletin SR-6R.
152Z Elastic Stop Nut Corp.

Starters.....A-B's line of motor starters have a variety of standard enclosures that satisfy any operating requirement. Only one moving part . . . the solenoid plunger. Request the A-B Handy Catalog.
152AA Allen-Bradley Co.

Starters, Magnetic Motor.....Starters feature ''Three Star Motor Control'' quality, improved pressure type terminals, exclusive visual or audible alarm circuit & plastic-covered coil insulation. Publ. EE-191.
152BB Cutler-Hammer, Inc.

Starters, Motor.....Built in wide range of ratings for squirrel-cage, wound-rotor & Synchronous motors . . . for full or reduced voltage . . . reversing or non-reversing. Complete details in Bulletin No. 14B6410B.
152CC Allis-Chalmers Mfg. Co.

Switches, Magnetic Limit.....The new Femco Limit Switch provides automatic control for numerous applications. Makes available an illustrated Data Sheet which includes data on installation, types & operation.
152DD Femco, Inc.

Tanks, Pumpless Rectifier.....G-E pumpless rectifiers are the most economical way to get d-c power in the 750-kw range and above. Company makes available complete product information in Bulletin No. GEA-5689.
152EE General Elec. Co.

Transformers, Arc Furnaces.....Features: tap changers, core-type construction with inherently strong circular-concentric windings, dust-tight bus-bar seal, etc. For details, request Bulletin GEA-6236.
152FF General Electric Co.

Transformers, Control.....Illustrated, 32 p. describes complete line of G-E control transformers. Includes autotransformers, machine tool transformers & special application models. Request Catalog GED-2767.
152GG Wagner Electric Corp.

Transformers, Dry-Type.....For portable tools, machines or lighting systems, these transformers get the right voltage close to the load—give you a flexible, modern power system. For details, request, Bulletin TU-57.
152HH Wagner Electric Corp.

Transformers, Variable.....New Powerstat variable transformers, types 136 & 236, offer new design, new ratings and new performance. Bulletin discusses new features and includes a price list. See Bulletin P354.
152II Superior Elec. Co.

Transformers, Variable.....There's a Powerstat to meet your every requirement. New reference covers: design; features; manual operation; motor drives; circuitry; etc. For full details, see Bulletin No. P355G.
152JJ Superior Elec. Co.

Transformers, Variable.....For use in hazardous atmospheres where a spark could cause untold damage, a complete line of standard explosion-proof & oil-cooled models are offered in many capacities. Bulletin P550.
152KK Superior Elec. Co.

Transistors & Rectifiers.....New brochure, designed as a quick reference guide for electronic engineers, contains condensed specifications and rating information on transistors and rectifiers. Publication No. ECG-95.
152LL General Elec. Co.

Transmitters, Power.....Unequalled for repeated start-stop machine operation. Use of transmitters makes it possible to simplify machines, reduce costs, improve operation, etc. Details in Bulletin CE-3303.
152MM Diehl Mfg. Co.

Unit Substations.....Modernize your plant's electrical system with A-C unit substations. Units fit into any plant & can be mounted anywhere. For information, request your copy of ''Power at Load Centers Pays Off.''
152NN Allis-Chalmers Mfg. Co.

Wire & Cable, Electrical.....Illustrated, 16 p. lists all trade names, products & their applications. Selection charts help select the best insulated electrical cable for each condition of use. Request Bulletin 1096.
152OO Okonite Co.

Agitators

Packaged units. (153A)

. . . Agitator line newly available offers packaged units that are shipped complete, ready to run. Both turbine and paddle type impellers are included.—*Philadelphia Gear Works, Inc., Philadelphia, Pa.*

Agitator, Experimental

Bench, pilot scale. (153B)

. . . Model ELB experimental agitator permits small scale fluid agitation to be done without loss of geometric, kinematic or dynamic similitude. Scaleup accuracy is increased.—*Chemineer, Inc., Dayton, Ohio.*

Agitators, Fluid

Integrated packaged units. (153C)

. . . Philadelphia gear reducers for turbine and paddle-type fluid agitator drives have a long performance record among major processors. Now this manufacturer is offering a completely integrated packaged fluid agitator service.—*Philadelphia Gear Works, Inc., Philadelphia, Pa.*

Blender, Liquid-Feed

Liquids and solids mix swiftly in single operation. (153D)

. . . A single operation is all that this new liquid-feed blender requires to blend swiftly liquid and dry materials. This modification is designed as an integral part of the p-k twin-shell blender. Mating a wide variety of, until now, unblendable liquid-solid mixtures, this unit should find plenty of uses in the plastic, chemical and food processing industries.—*The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.*

Disperser, Continuous

Based on successful batch machine. (153E)

. . . The new Kinetic Reaktor is an adaptation of the well-proven Kady mill designed to handle a continuous flow of material. The Reaktor is recommended for use where chemical reactions are promoted best by agitation, where the most rapid dispersion of reagents is required, or where agitation appears more profitable for inducing a reaction than do high temperatures or pressures.—*Kinetic Dispersion Corp., Buffalo, N. Y.*

Disperser, Sodium

Packaged unit for pilot plant work. (153F)

. . . Designed around the Cowles Dissolver, two new packaged units are being offered for dispersing sodium in an inert organic medium. The highly efficient dispersing action of the Cowles impeller has been fully utilized in both the 1,000-2,000 ml. laboratory unit and the 3-7 gal. pilot unit.—*Morehouse Cowles, Inc., Los Angeles, Calif.*

Dissolvers, Salt

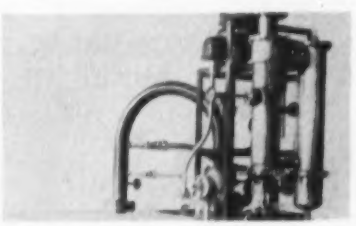
Plastic construction offers advantages. (153G)

. . . Dissolvers for rock and evaporated salt as well as brine storage tanks are being made for the first time of polyester glass-reinforced plastics. These new tanks completely eliminate corrosion problems. They need no paint. Because they are translucent, the true level of salt is visible from any position around the units.—*International Salt Co., Scranton, Pa.*

Dryer-Blender

Scale model available for product testing. (153H)

. . . Scale models of a glassed-steel conical dryer-blender now are available for product testing. New dryer can be used for handling every acid except hydrofluoric, and for alkalis up to pH 12. Experimental work with these small units gives information on results to be expected under plant scale processing conditions.—*Pfaudler Co., Rochester 3, N. Y.*



Feeder, Flush

Handles concentrated slurries and corrosive liquids. (153I)

. . . Small quantities of thin mud-like slurries or corrosive liquids can be fed into processes by a new flush feeder. Device incorporates a unique check valve assembly so that the slurry being metered cannot enter the primary displacement cylinder of the metering pump. Flow can be controlled down to 0.75 gph.—*Proportioneers, Inc., Providence, R. I.*

Feeder, Rotary

Built with integral, variable speed. (153J)

. . . A rotary feeder that incorporates an integral, variable-speed drive is reported well suited for bulk chemical service. Unit has been well tested on the job, including one handling hot, abrasive chemicals containing hydrofluoric acid at 10 psi. Two models are available—one for 3½ psi. and the other for pressure to 10 psi.—*Beaumont Birch Co., Philadelphia, Pa.*

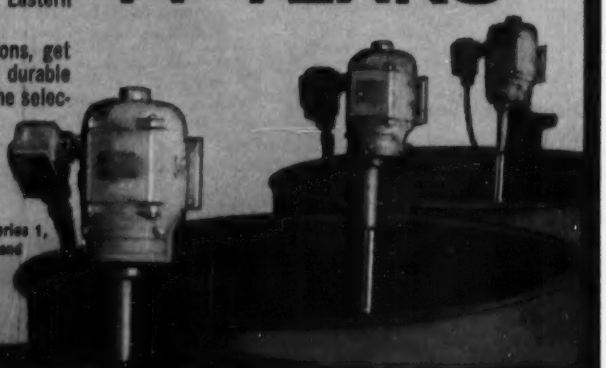


Back in 1942 the new synthetic rubber program was of urgent importance to the war effort. Naugatuck Chemical Co., now a Division of U.S. Rubber Co., developed processes that included fluid mixing applications. Many of Naugatuck's top-entering and portable mixers were engineered and manufactured by Eastern Industries specifically for these processes.

After fourteen years of hard, continuous service, these Eastern Mixers continue proving their built-in **reliability.**

If you have a process entailing critical operating conditions, get a long-term guarantee on your investment by selecting durable Eastern Mixers. Eastern offers engineering assistance in the selection of proper mixers from the complete Eastern line.

CONTINUOUS SERVICE . . . 14 YEARS



Eastern INDUSTRIES, INC.
Mixer Division
Regent Street
Norwalk, Conn.

Write for Catalog Series 1, containing product and engineering data.

PORTABLE MIXERS



Various models offer a choice of speeds and H.P. dependent upon the consistencies of fluids. All models are available with shafts and propellers of various alloys. Single and dual propellers, and a wide choice of motors give flexibility to handle the most critical of operating conditions.

TOP & SIDE ENTERING MIXERS



Heavy-duty models cover the range from ¼ to 30 H.P., at speeds from 280 to 1725 R.P.M. Versatile in design . . . rugged in performance, these mixers offer a wide choice in mounting arrangements and motors. All side entering models are available with stuffing boxes which can be repacked with a full tank.

TURBINE MIXERS



Many of the Eastern Turbine applications include blending, dissolving and heat transfer. A variety of motor mounts and stuffing boxes available within a H.P. range of ¼ to 40, add flexibility to the Eastern line.

Feeder Screw

Delivers dry solids at uniform rate. (155A)

. . . For feeding powdered dry solids to process the Vibra Screw Feeder offers uniformity of flow within 1% by actual weight. Either amorphous or pulverized crystals, free-flowing or sticky, can be handled with equal precision. Secret of the Vibra Screw's uniform action lies in use of density control along with volumetric metering and vibratory flow to completely fill and empty the measuring element. —*Vibra Screw, Glen Ridge, N. J.*

Feeder, Vibratory

Of electro-permanent magnetic type. (155B)

. . . This new type of vibratory feeder claims to offer tops in efficiency, durability and economy in obtaining highly controlled rates of various feeds. A simple electro-permanent magnetic drive delivers the high vibratory output. Three available models of the vibratory feeder are able to move two, four or ten tons/hr. of dry sand.—*Eriez Mfg. Co., Erie, Pa.*

Mill, Ball

Four to seven times greater in capacity. (155C)

. . . The gyratory ball mill, now available commercially, turns centrifugal force into a help rather than a hindrance. Capacity is actually four to six times that of the conventional mill. To load the mill for batch operation the cover is removed and the charge poured in. After milling the cover is removed and mill tilted about its hinge to dump the load. Mill can operate continuously with ease because small radius of gyration permits easy feeding, discharging. Cover is fitted with a cylindrical hopper with diameter substantially greater than radius of gyration so that feed pipe can be inserted below top of hopper. A grate guards the opening through the cover to retain the balls.—*General Machinery Co., Spokane, Wash.*

Mill, Dispersion

Pressure discharge. (155D)

. . . Dispersion mill discharges with pressure. The mill eliminates pump on discharge. It permits a closed system in addition to discharge at higher level than feed.—*Tri-Homo Corp., Salem, Mass.*

Mill, Dispersion

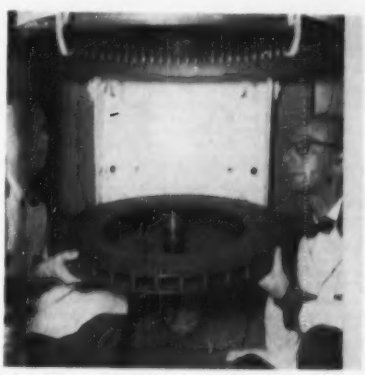
Uses turbulent jet flow to break pigment agglomerates. (155E)

. . . A recently available dispersion mill helps paint formulators achieve maximum results from the pigments incorporated in the paints. Pigment agglomerates or clusters are separated into individual particles by the extreme turbulence generated in high-velocity flow through jets. Furthermore, these forces promote good wetting of the pigment particles by the vehicle.—*The Patterson Foundry & Machine Co., East Liverpool, Ohio.*

Mill, Grinding

Lined with pins, it gains efficiency. (155F)

. . . Basic design feature in a 27-in. Big Inch impact mixer and grinder has been revealed as a different type of impact surface against which the rapidly moving particles are hurled. Design advantages include the unit's ability to process solids and slurries economically at high tonnage throughput rates. Compared to other impact mills, it has double the output per horsepower. And it can be run without producing any appreciable amount of fines, if such is desired. As for the surface, instead of being continuous it consists of a liner of vertically mounted pins with free space between individual pins. As the particles hurtle against this encircling barricade the fines stream through the spaces between the pins and are deflected downward without appreciable damage. Coarser particles collide full force against the pins, shatter or break apart and then drop into the receiving hopper.—*Entoleter Div., Safety Car Heating & Lighting Co., New Haven, Conn.*



Mill, Roll

Grinds soft minerals to 20-325 mesh. (155G)

. . . With over 800 mills now operating, the German-developed Loesche mill has been improved and added to the Hardinge line. Known in the U. S. as the Disk Roll Mill, it is particularly suited for grinding relatively soft minerals. Featuring the lowest maintenance and power cost for mills of this type, it can also grind economically certain abrasive materials which cannot be ground in other roller type mills.—*Hardinge Co., York, Pa.*

Mixer, Solids

Avoids dusting. (156A)

. . . Using a unique precessional motion, the Nauta mixer quickly mingles any number of similar or dissimilar dry materials into a uniform mixture. Gentle, positive action mixes solids intimately in any proportions without dusting or degradation.—*Blaw-Knox Co., Buffalo, N. Y.*

Pulverizer

For precise control. (156B)

. . . Pulverizer for grinds in 4 to 20 mesh range controls particles size, has higher throughput because downtime for cleaning is less. Protection of product purity is basic.—*Metals Disintegrating Co., Summit, N. J.*

Valve, Solids Flow

For flyash, other industrial dusts. (156C)

. . . Designed to control flow efficiently during pneumatic transport of fine solid materials is the new line of type C materials-handling valves. They of- fer advantages of self-feeding, nonplugging operation with positive shutoff; high capacity.—*The Allen-Sherman Hoff Co., Wynnewood, Pa.*

TECHNICAL LITERATURE

FEEDERS & MIXERS

Agitating Equipment.....Fully illustrated, 50 p. covers: Model WT Agitator Drive; Model T & TA Agitator Drives; Model TB & TAB Agitator Drives; Model No. 3 Agitator Drive; Flomix; etc. Catalog No. 530.
155b New England Tank & Tower.

Agitating Equipment.....Use Nettco Flomix to combine liquids & solids as they flow through a pipe line. For complete information, company makes available bulletins & data. Nos. 531, 551 & 532.
155a New England Tank & Tower.

Agitators.....Illustrated reference describes the model ELB experimental agitator . . . the only agitator specifically designed for bench scale and pilot plant mixing operations. Request copy of Bulletin No. 109.
156D Chemineer, Inc.

Agitators, Fluid, Packaged.....Offers a new line of packaged fluid agitators . . . plus complete fluid agitation engineering service . . . plus field service—right in your plant . . . etc. Illustrated Bulletin A2-55.
156E Philadelphia Gear Wks.

Agitators, Radial Propeller.....For blending liquids, dissolving solids in liquids, mixing gases with liquids, aerating, gasifying. Operated in any type open or sealed vessel. Request Bulletin No. 56-W.
156F Struthers Wells.

Blenders.....Designed for fast, efficient operation, Day Blenders can be equipped with a variety of agitators for your specific product. For further details on these blenders, request Bulletin No. 800.
156G J. H. Day Co.

Blenders, Dry.....Sturtevant Dry-Batch Blenders speed up production with 4-way mixing & shorten shut-downs with "open-door" design. Batches from 500 to 40,000 lbs. exactly as you want them. Request Bulletin.
397b Sturtevant Mill Co.

Blenders, Duplex.....Exclusive American features: completely sanitary; removable shaft—cleaning accomplished with minimum of time; solid end construction. Company makes data sheets available upon request.
157a *Amer. Welded Tank & Machy.

Blenders, Horizontal..... Exclusive American features: Completely sanitary; removable shaft; solid end construction—only possible with American's removable shaft assemble. For details, see '56 Catalog.
157b *Amer. Welded Tank & Machy.

Blenders, Twin Shell.....In plant after plant . . . the Patterson-Kelley twin shell blender does the job better, faster, and lasts longer. For complete information on product line request descriptive Catalog 13.
6 Patterson-Kelley Co.

Blenders, Spiral.....New Catalog gives exact specifications in light, medium and heavy duty blenders offered, plus information on special order design and service. Points out money-saving & time-saving improvements.
156H American Welded Tank.

Blending Systems.....Blend two or more liquids in preset proportions, automatically, in closed, continuous production. Feature highest possible accuracy. For complete information, request the "Blending" Folder.
156I Bowser, Inc.

Dissolvers.....For processors of liquid-liquid, gas-liquid & solid-liquid products, including . . . Chemicals, Paints & Inks, Plastics, Pharmaceuticals, Foods & Beverages. Many models to choose from. Request details.
156J Morehouse-Cowles, Inc.

Dryer-Blenders.....The conical, rotating dryer-blenders give you speed, ease & efficiency for drying & blending a broad range of corrosive & heat-sensitive materials, using either steam or hot water. Request details.
156K Glascote Products.

Dryer-Blenders.....Solid one-piece construction of inner vessel for maximum strength . . . no joints or clamps to break up the drying surface area . . . effective drying with no waste of steam or hot water. Data Sheet 26.
156L Pfaudler Co.

Feed Systems, Chemical.....Issues a new catalog on "packaged" chemical feed systems...for general water treating requirements and for individual chemical processing needs. Request illustrated Bulletin LP-1254.
156M Phila. Pump & Machy. Co.

Feeders.....Company announces the availability upon request of a revised and enlarged general catalog which describes its complete line of Pulva-Sizers, Com-Bin Feeders and auxiliary equipment. Fully illustrated.
156N Pulva Corp.

Feeders.....50 p. of technical data, descriptions & photos of vibratory equipment, feeders, conveyors, power tools, shaft seals, diesel pile hammers, gasoline hammers, selenium rectifiers, etc. Catalog No. 554.
156O Syntron Co.

Feeders.....Describes and illustrates Fuller's line of roll and vane-type feeders and rotary valves. Feeders are designed to handle a large variety of dry pulverized and granular materials. Bulletin No. F-5.
156P Fuller Co.

Feeders.....Fully illustrated reference describes company's Rotodip Model 65 continuous volumetric feeder for liquids. Covers feeder's construction, its operation and materials handled. Bulletin No. 65-H12A.
156Q Omega Mach. Co.

Yours For The Asking

- **BALL & PEBBLE MILL CATALOG Y, SECTION B**
  Production Mill design, construction, and operation.
- **CONE BLENDER FOLDER** Showing Cone Blenders & Vacuum Dryers.
- **DRY & PASTE MIXERS CATALOG V-1**
  Ribbon & Paste Mixers, Cone Blenders.
- **JAR MILL CATALOG**
  Showing Jar Mills & Jar Rolling Mills for Laboratory & Small Production.
- **HANDBOOK OF BALL & PEBBLE MILL OPERATION**
  Explaining operating principles, selection of equipment, good procedures, etc.

PAUL O. ABBE INC.
375 Center Ave., Little Falls, New Jersey

* From advertisement, this issue.

Great or Small . . . difficult or easy . . . whatever

Your **MIXING PROBLEMS**

they'll be SOLVED by **AMERICAN**

exclusive AMERICAN Plus features:

1. COMPLETELY SANITARY: Patented Spiral expeller ring assembly prevents shaft leakage.
2. REMOVABLE SHAFT: periodic take downs for cleaning accomplished with minimum of time.
3. SOLID END CONSTRUCTION: Only possible with American's removable shaft assembly.



Remember . . . *these exclusive features are yours at no extra cost when you invest in American.*
Write, phone or wire for complete details today.

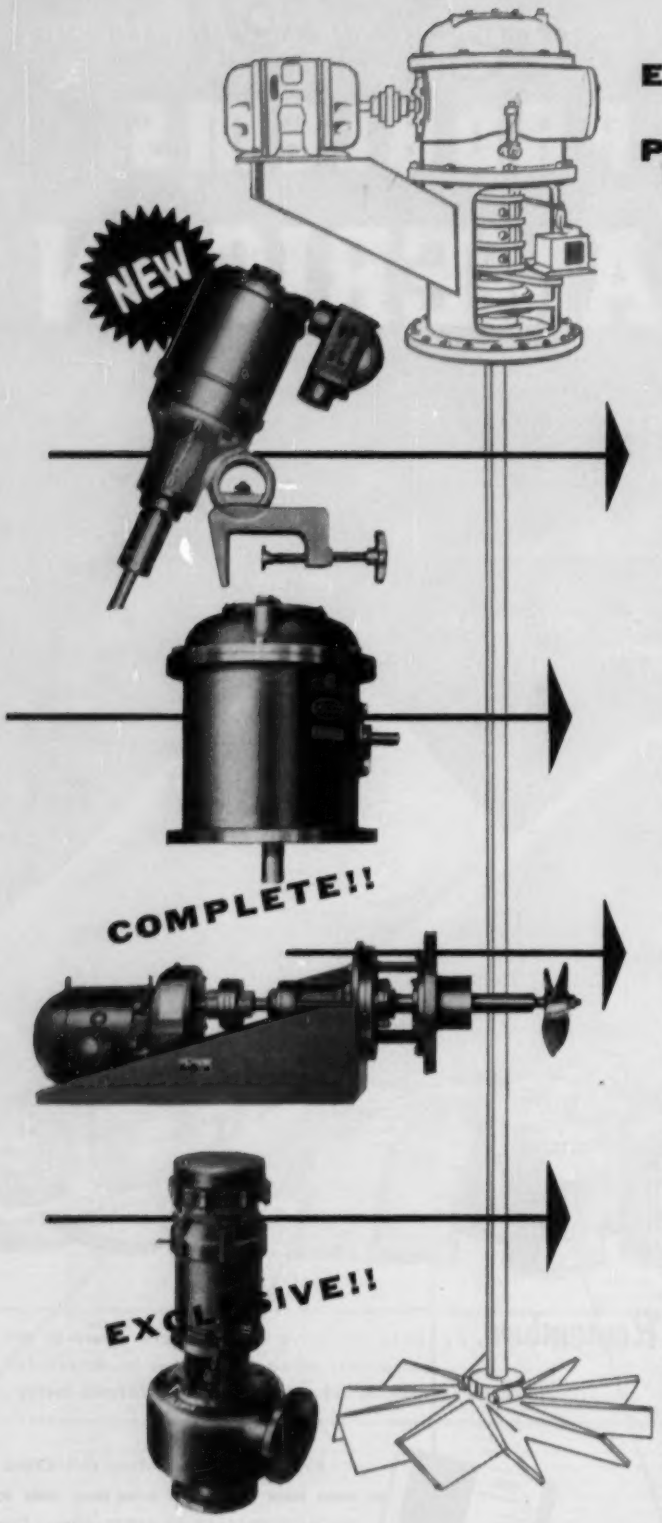
HORIZONTAL BLENDERS CONICAL BLENDERS

Representatives in Major U.S. Cities

AMERICAN Welded Tank and Machinery Corp.
subsidiary WELDED TANK AND MACHINERY CORP.
CE 199 Liberty Ave., Mineola, L. I., New York

Gentlemen: Please send copy of data sheets on American Duplex Blenders, and '56 catalog on Horizontal Blenders.

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Address _____
City _____ State _____
Care of _____



ENGINEERED AGITATION

PAYS BIG DIVIDENDS!!

Eliminate process agitation problems and gain speedier processing, lower operating and power costs, and minimum maintenance with NETTCO engineered agitators. The NETTCO agitator line, engineered to meet the severest production requirements, is the most complete offered today. Check the design superiority of our many models and see why NETTCO has meant "engineered agitation" at its best for over fifty years.

PORTABLE & FLANGE MOUNTED MIXERS

These units feature exclusive and POSITIVE built-in DRIP-PROOF construction. These rugged, economical mixers are available in high speed (1800 RPM) and medium speed (420 RPM) designs (all with Standard NEMA vertical C flange motors). Models range from ⅛ to 2 h.p. . . . for portable, open tank, or closed tank installations. Standardized dimensions permit interchangeability of parts, and wide application flexibility.

TANK TOP AGITATORS

Model WT (worm gear reduction drive) — typical of the twenty-seven sizes and models of tank top agitators built by NETTCO — is available in 7 sizes (⅓ to 30 h.p.) with up to 39 ratios in each size . . . from 3.5:1 to 69:1. These ruggedly built drives incorporate many features: oversize Timken bearings widely spaced on large vertical shaft, enclosed housing, splash lubrication, positive drip-proof design.

SIDE ENTERING AGITATORS

Model KBA (gear motor driven side drive), one of a wide selection of models offered in a variety of sizes, motor mounts, speed reduction designs, and stuffing box modifications. Motor ratings range from ⅓ to 30 h.p. Frames, shafts, and propellers are available in alloys to suit any process condition. New, exclusive "maintenance-miser" mechanical shaft seals permit seal inspection or service under full pressure, are exceptionally durable for extra-long life.

FLOMIX® PIPELINE AGITATORS

For fast, uninterrupted processing (without tanks), investigate NETTCO's exclusive pipeline mixer. FLOMIX (in 1″ to 8″ pipe sizes) handles high capacities (400 GPM plus; viscosities of 75,000 SSU); high pressures (over 400 psi); and high temperatures (to 300° C). For the continuous mixing of liquids, gases and liquids, and liquids and solids . . . increased product uniformity, faster processing, and overall installation and maintenance economies. Use FLOMIX® for mixing, blending, reacting, washing, contacting, bleaching, absorbing, chlorinating, clarifying or similar processes.

NETTCO agitation engineers will gladly make recommendations on your particular process requirements. For additional data on equipment that fits the application, request Bulletin 551 and our data sheet. Send specifications to New England Tank & Tower Co., 87 Tileston Street, Everett 49, Massachusetts.

NETTCO
ENGINEERED AGITATION

1956 INVENTORY

TECHNICAL LITERATURE

Feeders—

Feeders, Weigh

Feeders.....Outstanding features of the Lapp "Auto-Pneumatic" Pulsafeeder makes possible continuous automatic processing of liquids which cannot be satisfactorily handled by plunger-type metering pumps. Bul. 400.
159A Lapp Insulator Co.

Feeders.....Prater offers Blow-Thru Feeder for pneumatic systems. Available in cast iron and bronze. Power requirements vary according to the fineness and abrasiveness of the product. New Airlock Catalog.
159B Prater Pulverizer Co.

Feeders, Belt Gravimetric.....For continuously feeding dry materials at medium to high rates. Tells how feeder with Sens-A-Gram controller maintains accuracies well within +1%. Bulletins Nos. 37-M1 and AR-8.
159C Omega Mach. Co

Feeders & Crushers.....McLanahan reciprocating plate feeder & Rockmaster crusher for most economical feeding & crushing of large tonnages of rock, ore, limestone, etc. Bulletins RM-505 & FRE-4812.
159D McLanahan & Stone Corp.

Feeders, Flush.....With check-valve difficulties minimized & erosion eliminated, an extremely broad range of slurry solutions or corrosive liquids can be handled by this flushfeeder. Request complete information.
159E Proportioneers, Inc.

Feeders, Rotary Airlock.....Seven models, for feeding or unloading Pneumatic conveying systems, sealing off cyclone dust collectors, etc. against air leakage. Request technical literature.
161a *Prater Pulverizer Co.

Feeders, Vibrating.....Covers Velofeeder, a new mechanical vibrating feeder. Outlines operating principles & specifications of feeder, which can be electronically synchronized to match flow-speed of other equipment.
159F Richardson Scale Co.

Feeders, Vibratory.....For complete protection against dusty atmosphere & supply hopper spillage, a new optional dust-tight design feature has been incorporated in the F-55DT feeder. Details, specifications, etc.
159G Syntron Co.

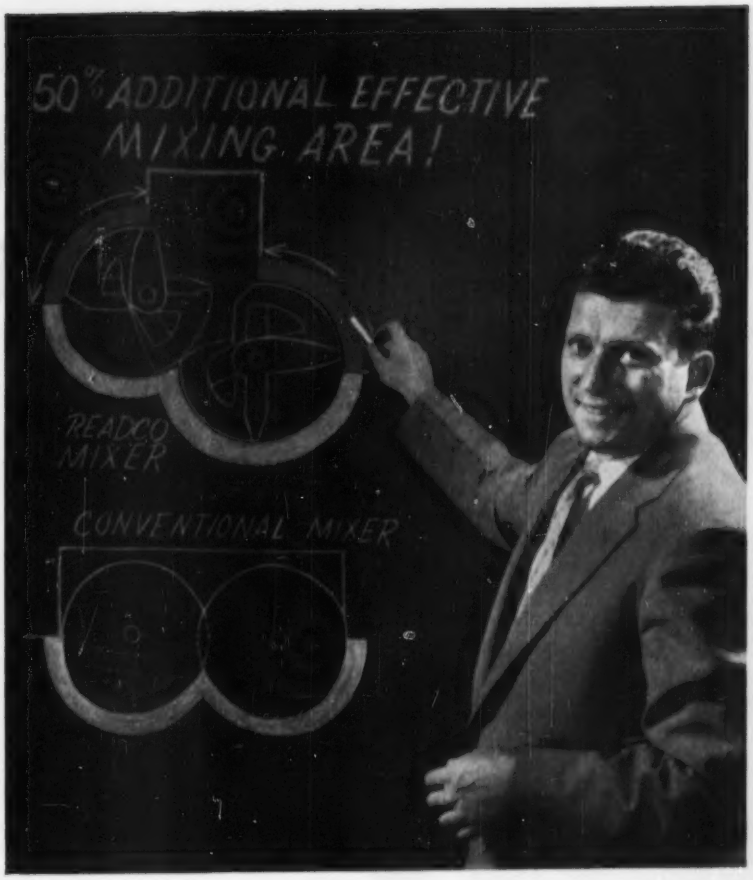
Feeders, Volumetric..... Volumetric feeders of simple design and rugged construction, easily adapted to installations requiring proportional pacing by auxiliary meters. Describes feeders in Bulletin 45-H8.
159H Omega Mach. Co.

Feeders, Weigh.....Exact Weight weigh feeders help produce a more uniform product, reduce rejects to a minimum and effect a great saving in material. Complete data on weigh feeders for plastic molding.
159I Exact Weight Scale Co.

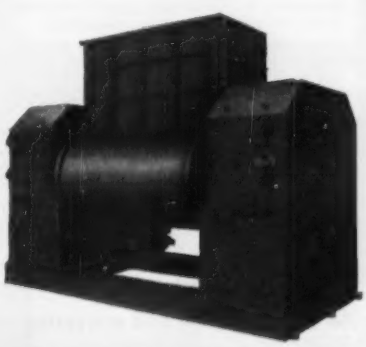
*From advertisement, this issue.

Can't remember?

Can't quite recall who built that new plant, who developed that new process? Well, then, take a crack at finding the answer in this issue's Inventory of New Plants & Facilities (p. 7) or Inventory of New Processes & Technology (p. 45). They're designed to help you.



READCO'S IMPROVED MIXER DESIGN PROVIDES COMPLETE DISPERSION IN LESS TIME...FOR LESS COST

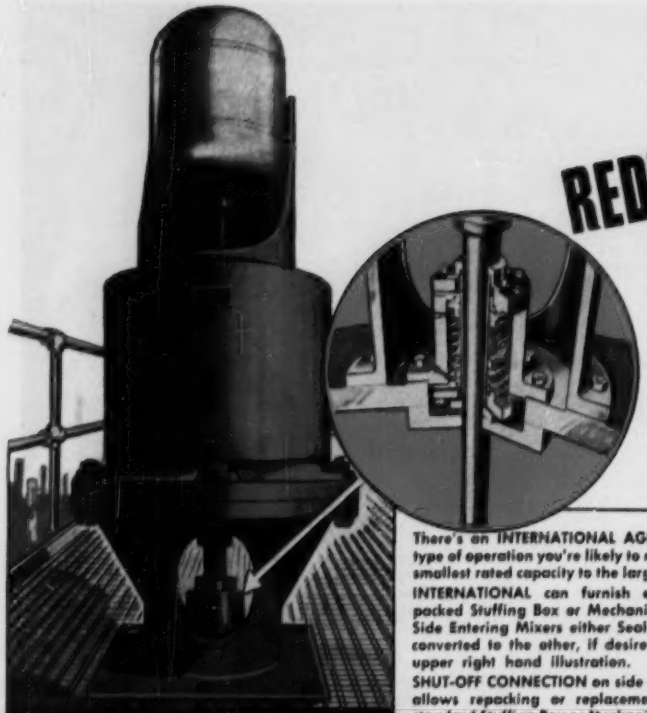


READCO STANDARD CORPORATION

Bakery-Chemical Division
YORK, PENNSYLVANIA

It's Readco's unique split-level dispersion bowl that makes the difference. It provides a greater ratio of surface to the volume of mix. Overlapping sigma arm mixing action exposes new surfaces and breaks down the entire mass with each rotation, producing a homogenous mix in a short mixing cycle, eliminating peak loads. Closer clearances between mixer arms and shell prevent build-up of materials.

Readco Paper Coating Mixers can be supplied for manual or hydraulic discharge in 150, 350 and 750 gallon working capacities. Write for complete information.

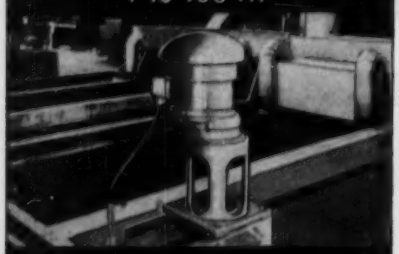


REDUCE YOUR LIQUID PROCESSING COSTS

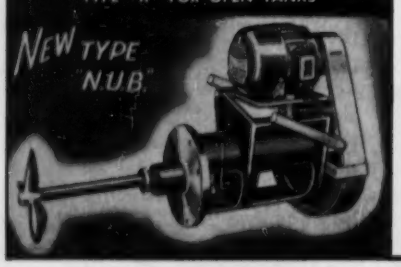
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"INTERNATIONAL" Equipment, of course!

Type "FR" INTERNATIONAL
Slow Speed Turbine Type Mixer
also available in right angle types
1 to 100 HP



TYPE "K" FOR OPEN TANKS



There's an INTERNATIONAL AGITATOR for any type of operation you're likely to need—from the smallest rated capacity to the largest installation.

INTERNATIONAL can furnish either standard packed Stuffing Box or Mechanical Seals.—On Side Entering Mixers either Seal can readily be converted to the other, if desired, as shown in upper right hand illustration.

SHUT-OFF CONNECTION on side entering mixers allows repacking or replacement with either standard Stuffing Box or Mechanical Seals with a full head of liquid, without appreciable leakage.

New "International" Mechanical Seals

Specifically designed to resist corrosion, high temperatures and pressures—to seal toxic or flammable fluids perfectly without losses,—to reduce fire hazard, power, labor and repair costs, with much longer service and fewer shut downs. Certain applications show reduction of friction up to 83% over conventional packings—No scoring of shafts—permits specially designed sealing of gritty and abrasive fluids. Seals can be engineered for shaft rotation in either direction. Mechanical Seals can be furnished optionally at relative cost factor as desired.

INTERNATIONAL Stands back of its product with expert service help when you need it. INTERNATIONAL'S Quarter Century of complete coverage in the Chemical Agitation and processing field is your assurance of lasting satisfaction. Remember to investigate "INTERNATIONAL" when you want Guaranteed performance.

Any of the following Bulletins will be gladly sent on request. Simply indicate the subjects in which you are interested.

Technical Bulletins Available

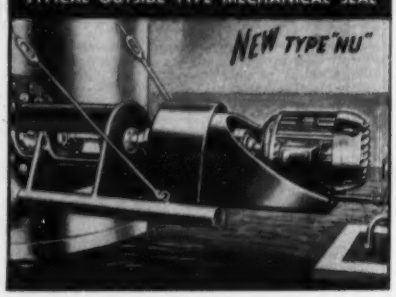
Top Entering Agitators	73, 76, 76-A, 81
Side Entering Agitators	72-A
Portable Mixers	74-A
Mixing & Extruding Machinery	62-A
Dry Blenders & Ribbon Mixers	78
Grinding & Mulling Pans	5
Ball & Pebble Mills	100-A, 100-B
Laboratory & Pilot Plant Equipment	77-A
Stack Fans & Dust Boosters	109-A

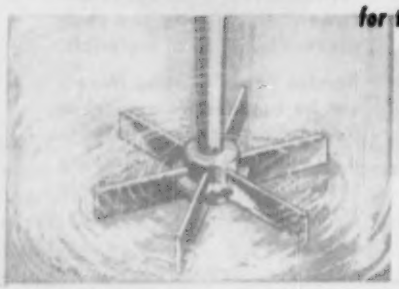


TYPICAL INSIDE TYPE MECHANICAL SEAL



TYPICAL OUTSIDE TYPE MECHANICAL SEAL





for the best in mixing and processing—consult

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SA-cramento 2-6750

TECHNICAL LITERATURE

Feeders, Wet Reagent—

Mixers

Feeders, Wet Reagent.....Accurately meter minute quantities of liquid from 0 cc to 2000 cc per minute. Float valve in tank permits connection of feeder to bulk storage device. Data in Bulletin F6-B9.
161A Denver Equipment Co.

Homogenizers, Industrial.....Profusely illustrated folder describes the Gaulin Homogenizer. Includes: construction and operation; theory of homogenization; products processed; specifications; etc. Bulletin H-55.
161B Manton-Gaulin Mfg.

Homogenizers, Laboratory.....Fully illustrated booklet describes the Gaulin Laboratory Homogenizer . . . specially designed for research, pilot plant or limited production operations. Request your copy of Folder No. LH-55.
161C Manton-Gaulin Mfg. Co.

Mills, Ball & Pebble.....Outstanding in the field of fine grinding, mixing and processing. Built of all steel welded construction, they feature great strength and ruggedness. 20 p. illustrated Catalog No. 100.
161D International Engrg.

Mills, Ball & Pebble.....Valuable references give complete details on the Abbé Engineering series of mills for every range of work from small batch jobs to full scale plant production. Catalogs Nos. 73 & 77.
161E Abbé Engrg. Co.

Mills, Imp.....The Raymond imp mill is equipped to handle almost any combination of pulverizing, blending, classifying, conveying and/or drying operation. For more complete details, request Catalog No. 77.
161F Raymond Div.

Mixers....."How to Choose the Right Industrial Mixer" includes data on: correct mixing action; uniformity of batches; conversion of automatic batch operation; maintenance & repair costs; etc. Bulletin R-1701-B1.
161G Worthington Corp.

Mixers.....Shear-Flow incorporates all desirable features for mixing textile colors. It not only mixes, but it disperses solid pigment colors in various clears or extenders. Offers full details on new mixer line.
161H Gabb Special Products Div.

Mixers.....Data on turbine & slow speed heavy duty agitators . . . for open & closed tanks. Covers operation & applications of super-turbine & injection mixers, mixer data, mixer drive heads, etc. Bulletin No. 76.
161I International Engrg.

Mixers.....The Eppenbach Homo-Mixer is a high speed, high shear homogenizer-mixer. Literature covers description, method of operation, numerous advantages, etc. Request illustrated Bulletin No. 402-R-1.
161J Admiral Tool & Mfg. Co.

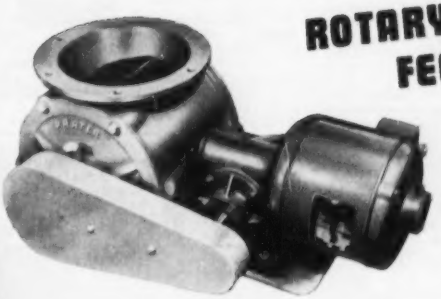
Mixers.....Describes Super Agitators & Mixers. Patented standpipe around propeller shaft assures positive agitation & circulation. Patented wearing plate prevents sand-up on shut-down. Bulletin No. A2-B4.
161K Denver Equipment Co.

Mixers.....Mix-Mullers for chemical and process industries. Covers Simpson mulling principle; mulling for dry, wetted and plastic mixtures; Mix-Mullers for special requirements; etc. "Handbook on Mulling."
161L National Engrg. Co.

Mixers.....New—broad in application—standardized for low cost. Four different models, for propeller, turbine, gas absorber and other mixing elements. Complete details in fact-filled Unimixer Bulletin.
161M Patterson Foundry & Mach.

to better serve your needs

PRATER ROTARY AIRLOCK FEEDERS



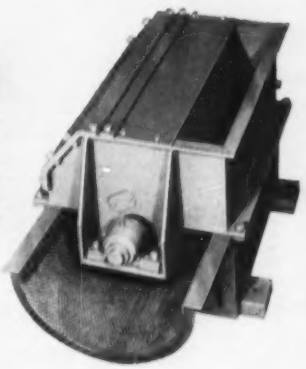


For feeding or unloading Pneumatic conveying systems, sealing off cyclone dust collectors, bag filters or other dust suppression equipment against air leakage. Seven models in three sizes available in cast iron • bronze • cast steel • stainless steel.

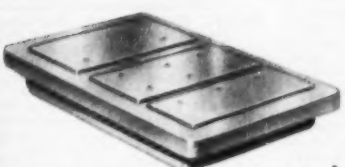
PRATER POWER SCREENERS

For smoothing out lumpy chemicals or any other agglomerated materials before mixing, blending or dissolving. Keeps grinding or particle breakage to an absolute minimum.





PRATER PERMANENT MAGNETS





To protect your products and processing machinery from the destructive effects of tramp iron. Readily installed in hoppers, chutes or spouts, Prater magnets reach deep into the flow to weed out nails, nuts, bolts, wire and those small slivers of metal which oftentimes pass on without detection.

Technical literature available on request

PRATER

PRATER PULVERIZER CO.
1536 S. 55th Court, Chicago 50, Ill.

TECHNICAL LITERATURE

Mixers—

Stirrers

Mixers.....Eastern's mixers are designed to meet the needs of today's chemical and industrial processes. Covers portable mixers, top and side entering mixers, turbine mixers, etc. in Catalog Series No. 26.
162A Eastern Industries.

Mixers.....Describes the Day Imperial Mixer. Built for heavy duty, engineered for precision, it incorporates many advanced engineering features to assure you high production at low cost. Bulletin No. 600.
162B J. H. Day Co.

Mixers.....Company's line of Jumbo mixers meets every requirement imposed by heavy loads. Standard-duty mixer is equipped with two roller bearings mounted on heavy fabricated supports. Bulletin 800.
162C J. H. Day Co.

Mixers.....Nauta Mixer features uniform, quick mixing of any number of dry materials, similar or entirely different in characteristics. Describes features and industries where it is profitably used. Catalog 374.
162D Blaw-Knox Co.

Mixers.....The Abbe Dispersall Mixer gives you power & speed, plus the tremendous advantage of easy cleaning, which readily allows shifting from one color or formulation to another. See Catalog 78.
313 Abbe Engrg. Co.

Mixers.....Triple action mixing assures uniformity, versatility, dependability & low cost. Blending, folding & mixing created by the unique triple ribbon and spiral assembly. Request Bulletin TSB 6-538.
162E Strong-Scott Mfg. Co.

Mixers.....Powered by a 50 hp. silent chain drive motor, the No. 15 is constructed of stainless steel, & jacketed to carry 125 psi pressure of steam or water. Working capacity is 100 gals. Request Catalog.
162F Baker Perkins.

Mixers.....Company makes available Confidential Mixing Data Sheet. Helpful checklist enables you to develop a complete technical description of agitation required for your process, quickly & easily. No. B-107.
Cov-4i Mixing Equipment Co.

Mixers.....The Velofin Mixer has a multiple disk impeller. It is effective in any viscosity; can be started when embedded in solids; reduces mixing time; requires no speed reduction. Offers detailed Bulletin.
162G H. E. Serner Co.

Mixers, Centrifugal.....Describes Rheinhuette contrifugal mixers for thorough mixing of acids; caustics & salts; cellulose & paper-pulp masses of high concentrations (4-5%); chemicals; dyes. Bulletin RKM-10.
162H Neumann & Weaver.

Mixers, Centrifugal....."High Speed Mixing with Entoleter Centrifugal Machines." Better quality, easily cleaned, compact size of equipment, more efficient processing . . . lower cost texture improved . . . etc.
333a Entoleter Div.

Mixers, Dry.....Describes conical blenders (design, operation, application, capacity, sizes & specifications) & ribbon mixers (operating & construction features, specifications, etc.). Illustrated Bulletin No. 78.
162I International Engrg.

Mixers, Dry Batch.....Efficient rotating drum-type machines for mixing various substances together into a homogeneous and inseparable whole, every part of which presents the same analysis. Fully illustrated.
162J Sturtevant Mill Co.

Mixers, Dry & Paste.....Announces the availability upon request of a Dry & Paste Mixers Catalog. 24 p. reference describes Paul O. Abbe Ribbon & Paste Mixers, Double Cone Blenders. Catalog No. VI
156e *Paul O. Abbe.

Mixers, Fluid, Packaged.....Find out more about "Packaged" fluid mixers. Include service-rated motors, quick change gear drives, full range of sizes, heavy duty shafts & bearings, etc. Bulletin A-156.
144 *Philadelphia Gear Works.

Mixers, Horizontal Batch.....Style "B" mixer loads, blends & discharges rapidly—is clean, dustless, sanitary. Handles all types of dry, damp & free-flowing wet materials. Request Bulletin No. 95.
162K Sprout-Waldron.

Mixers, Paper Coating.....Readco paper coating mixers can be supplied for manual or hydraulic discharge in 150, 350 and 750 gallon working capacities. Request product literature for complete details.
159 Read Standard Corp.

Mixers, Paste....."Pony" paste mixer combines mixing advantages of sigma blade, or heavy duty, paste mixer with versatility & ease of cleaning of a change can mixer. Illustrated Folder offers full details.
162L Herman Hockmeyer & Co.

Mixers, Pipeline.....Colorful new reference describes "American" Homomix continuous pipeline chemical mixer now available in a wider range of sizes and capacities from 1 gpm to 10,000 gpm. Request Bulletin No. 300.
162M American Well Wks.

Mixers, Pipe Line.....Company issues an informative booklet describing the Nettco Fiomix . . . a patented and unique pipe line mixer for continuous processing applications. Fully illustrated Bulletin No. 531.
158e New England Tank & Tower.

Mixers, Pony.....The exceptionally rugged, heavy duty design characteristics of the Day pony mixers enables you to mix a stiffer, heavier paste, resulting in many advantages. Details in Bulletin No. 500.
162N J. H. Day Co.

Mixers, Pony.....New Day twin motion pony mixer reduces mixing time over 50%. Working capacities of 3, 10, 25, 40, 50, 80, 100, 125 gal. are given. Request Bulletin I-502-PM for complete information.
162O J. H. Day Co.

Mixers, Portable.....Various models offer a choice of speeds and H.P. dependent upon consistencies of fluids. All models are available with shafts and propellers of various alloys. For data, see Catalog Series 1.
154a *Eastern Industries.

Mixers, Portable.....Includes information on the numerous features and advantages, materials of construction, sizes and specifications, portable-permanent mountings, etc., in illustrated Bulletin No. 74-A.
162P International Engrg.

Mixers, Portable.....Use in industry reduces cost, saves time, labor and secures better and more refined products. Catalog includes data on construction, dimensions, specifications, etc. 28 p. No. B-108.
Cov-4f Mixing Equipment Co.

Mixers, Portable.....Illustrated folder describes the all-new Porta-Blend. A portable liquid and dry mix blender, with self-contained power and feeder units. Request your copy of Bulletin NPB6-613 for full details.
162Q Strong-Scott Mfg. Co.

Mixers, Side Drive.....Presents 8 p. fully illustrated reference covering Nettco side drive with shut-off. Describes how the shut-off operates, numerous advantages, exclusive features, etc. Bulletin No. 532.
158d New England Tank & Tower.

Mixers, Side Entering.....The Type "NU" side entrance mixer is a brand new unique mixer design. It has no cast parts and is of all welded construction, including the stuffing box. Illustrated Bulletin No. 72-A.
162R International Engrg.

Mixers, Side Entering.....Furnishes detailed information on features, typical applications, mechanical design, maintenance, shaft seals, methods of installation, etc., in completely illustrated Catalog B-104.
Cov-4e Mixing Equipment Co.

Mixers, Steam-Water.....No. 1360 Series injects steam directly into the water, using every BTU of heat energy to bring water to a constant, predetermined temperature. Descriptive literature upon request.
162S Fulton Sylphon Div.

Mixers, Top Entering.....Information on top entering propeller mixers. Includes data on selection, construction features, sizes & specifications of high & slow speed top entrance mixers, etc. Bulletin No. 73.
162T International Engrg.

Mixers, Top Entering.....Illustrated and detailed 32 p. Catalog includes advantages typical installations, mechanical description, construction information, dimensions and selection tables, etc. Catalog No. B-102.
Cov-4c Mixing Equipment Co.

Mixers, Top Entering.....Makes available pertinent information on top-entering mixers (propeller type) . . . for closed tanks, pressure & vacuum . . . for open & loose-covered tanks. Data in Catalog No. B-103.
Cov-4d Mixing Equipment Co.

Mixers, Top & Side Entering.....Heavy-duty models cover range from ¼ to 30 H.P., at speeds from 280 to 1725 R.P.M. Offer a wide choice in mounting arrangements and motors. For complete data, see Catalog Series 1.
154b *Eastern Industries.

Mixers, Turbine.....Many applications include blending, dissolving and heat transfer. Variety of motor mounts and stuffing boxes available within a H.P. range of ¼ to 40. For complete data, see Catalog Series 1.
154c *Eastern Industries.

Mixers, Vertical.....Permit the mixing of a limited amount of liquids with dry ingredients. Occupy little floor space & have low hp. requirements. Can be adapted to meet your special needs. Request Bulletin 95.
162U Sprout-Waldron

Mixers, Water, Hot-Cold.....Descriptive literature on new hot-cold water mixers. No. 1350 Series Mixers give an accurate, controlled source of tempered water. Unaffected by variations in water pressure.
162V Fulton Sylphon Div.

Stirrers.....The Slo-Speed Stirrer was developed for use in laboratory procedures requiring stirring at a slow, constant speed. Bulletin discusses uses, construction & features. See Bulletin 738.
162W Precision Scientific Co.

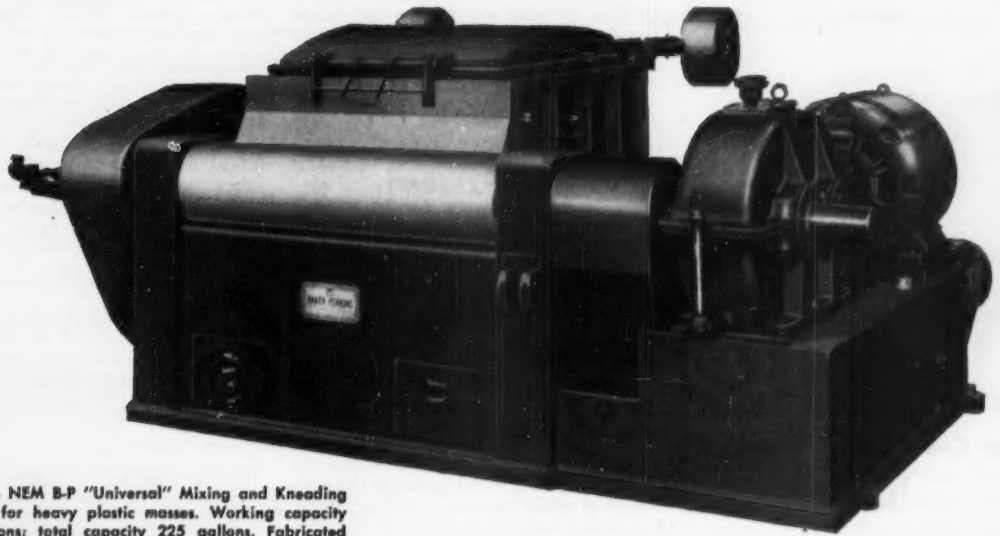
Can't remember?

Can't quite recall who built that new plant, who developed that new process? Well, then, take a crack at finding the answer in this issue's Inventory of New Plants & Facilities (p. 7) or Inventory of New Processes & Technology (p. 45). They're designed to help you.

*From advertisement, this issue.

BAKER PERKINS mixers will thoroughly mix and knead almost any material for the chemical processing industry

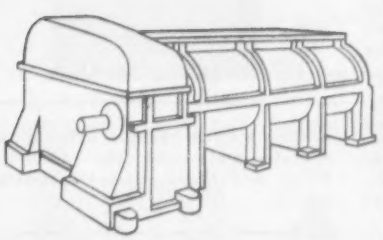
There is a BAKER PERKINS Mixer built to efficiently mix and knead materials ranging in consistency from dry powders and light fluids to stiff plastic masses. Close clearance between the blades and trough keep every particle of the material in constant motion so that no part of the batch escapes the thorough mixing action of the blades. Intensive kneading is maintained as the material is pulled and squeezed against the blades, saddle and sidewalls. Consult a B-P sales engineer for full facts.



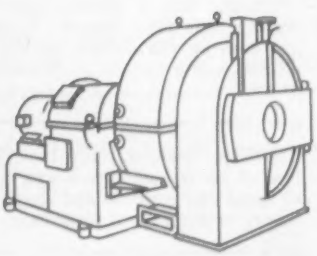
SIZE 16, NEM B-P "Universal" Mixing and Kneading Machine for heavy plastic masses. Working capacity 150 gallons; total capacity 225 gallons. Fabricated steel trough shell jacketed for 150 psi steam or water pressure. Cast iron trough ends are not jacketed. Saddle section has thermocouple for temperature control. Cast steel Sigma or Double Naben blades cored for circulating steam or water. Oil tight gear guards; anti-friction bearings. 50 HP motor.

BAKER PERKINS INC.
CHEMICAL MACHINERY DIVISION
SAGINAW, MICHIGAN

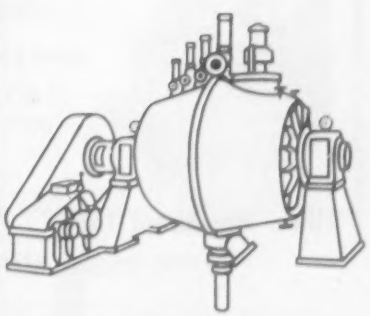
Other BAKER PERKINS products



EQUIPMENT FOR FOUNDRY INDUSTRY



CENTRIFUGALS



EQUIPMENT FOR RAYON PRODUCTION

Adsorbers, Self-Contained

For recovering solvent. (164A)

. . . Resorb adsorbers are now available in a new line of standard completely self-contained units. Utilizing activated carbon, units are employed for recovering solvents, purifying gases and conditioning air. Basic units are Series 50 and 70 for solvent concentrations between 0.2 and 1.0% by volume; Series 60 for relatively low air volume with high concentration of solvent; and Series 30 for relatively high air flows, solvent concentration 0.02 to 0.2% range—*Barnebey-Cheney Co., Columbus, Ohio.*

Backwasher

Overcomes fouling troubles. (164B)

. . . Backwash troubles with filtration, ion exchange materials are being overcome with a sub-surface washer. Solids deposits are broken up which prevents fouling of the bed, permits effective backwashing at normal rates. Channeling, short circuiting are avoided as are excessive backwash rates.—*Graver Water Conditioning Co., New York, N. Y.*

Cleaner, Air

Gains efficiency with filter aid. (164C)

. . . Extremely high cleaning efficiency, moderate cost and nearly complete freedom from maintenance expense are reported for a new air-cleaning system. The new Ultra-filtration system employs conventional tubular cloth filters. Bags are charged with a filter aid as a precoat material. Equipment is used on the same high-removal jobs now being serviced by units such as disposable or viscous filters and low voltage electrostatic precipitators. Excels other general air cleaning devices against fine atmospheric dust and tarry matter.—*Wheelabrator Corp., Mishawaka, Ind.*

Collector, Wet Dust

Transfers dust from air to suspended water. (164D)

. . . Movement of air through the Ventrijet wet dust collector atomizes water and mixes it with the air stream to remove suspended dust particles. Ventrijet is available in a range of capacities from 1,000 to 30,000 cfm. in single and double-row tube types. —*Pangborn Corp., Hagerstown, Md.*

Dust Collector

Uses bed of wet glass spheres. (164E)

. . . Basically, the new Hydro-Filter is an air scrubber where dust-laden air flows counter current to water through beds of glass spheres. Efficiencies up to 99.7% have been reported on products such as Western Bentonite, 3-4 micron carbonyl iron and optical dust. Credit for high collecting efficiency is given to: good contact between air and water; relatively long contacting time. Hydro-Filter is available in 14 models ranging in capacities from 2,-500 to 25,000 cfm.—*National Dust Collector Corp., Chicago, Ill.*



Filter, Dust

For flows up to 1,200 cfm. (164F)

. . . Boasting essentially 100% efficiency, Type RJ dust filter cleans dust-laden air, discharges trapped dirt automatically and continuously. High efficiency stems from use of Hersey principle of high-velocity reverse-air cleaning. But it differs from usual Hersey type filter because it catches the dust on the outside of the filter sleeves.—*Day Co., N. E. Minneapolis, Minn.*



Filter, Horizontal Tank

Faster operation. (164G)

. . . New features being built into a line of horizontal filters are claimed to speed up operation and simplify recovery or disposal of filter cake. They include a quick-opening hydraulically operated and sealed door.—*Industrial Filter and Pump Mfg. Co., Chicago 50, Ill.*

Filters, Kel-F, Teflon

New design. (164H)

. . . New design and prices up to 55% lower are announced for porous Teflon and Kel-F in-line filters. One square foot of filter area contained in volume 2 in. high by 3½ in. O. D.—*Porous Plastic Filter Co., Glen Cove, N. Y.*

3 NEW AAF PRODUCTS
now at work in
Chemical Plant Dust Control

1 AMERclone Dry Centrifugal Collector designed to handle large exhaust volumes containing dry, granular dust in large concentrations. Strictly a product of AAF research, AMERclone offers many features new to dry centrifugal design that result in these important advantages—

High Collection Efficiency. AMERclone offers collection efficiencies equal to or better than any centrifugal unit available today.

Requires Less Space. The fact that a single AMERclone tube, 4" in diameter, has a cleaning capacity of 333 cfm as compared to a 100 to 150 cfm rating for conventional units makes for important space savings.

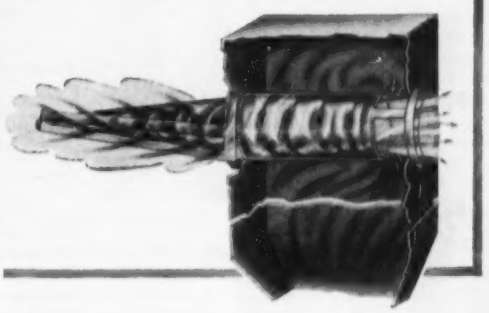
Less Subject to Abrasion. Abrasion resistance qualities are greatly increased with the use of thick wall gray iron castings, plus the fact that in AMERclone operation there is no recirculation of dust load to increase abrasive effect.

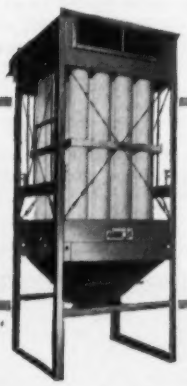
Maintains Efficiency. Collection efficiency of the AMERclone remains practically constant over a wide range of exhaust volumes with the compensating feature of the secondary air circuit.

For complete AMERclone data, write for AAF Bulletin No. 291.

AMERClone

DRY CENTRIFUGAL COLLECTOR





AMER Jet

FABRIC ARRESTER

2 AMERjet Fabric Arrester designed to handle extremely fine particles or collect material dry for reclaiming. Like all AAF Dust Control Products, AMERjet offers these basic features: **(1) small space requirements; (2) maintained performance over a wide range of operating conditions; (3) constant exhaust volume; (4) high collection efficiency.**

For complete AMERjet data, write for Bulletin No. 279.

3 Design 4 Type N ROTO-CLONE Hydro-Static Collector—A new version of AAF's famous Hydro-static precipitator which, in addition to the proven high efficiency cleaning action of its inverted S-shape water curtain, now offers—

- Improved and simplified entrainment separators to further reduce unit's low maintenance costs.
- Addition of 4 larger sizes to permit handling of exhaust volumes up to 50,000 cfm.
- Improved water level control maintains performance under extremes in operating conditions.

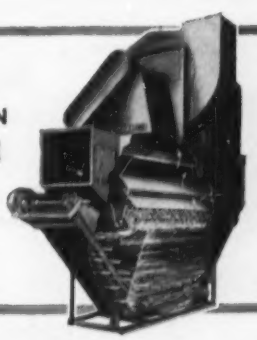
For complete Type N data, write us for AAF Bulletin No. 277.

DESIGN 4 TYPE N

ROTO-CLONE

HYDRO-STATIC

COLLECTOR



AAF

American Air Filter

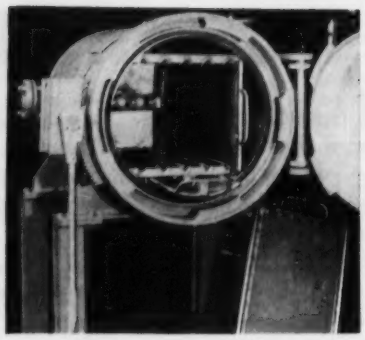
COMPANY, INC.

American Air Filter of Canada, Ltd., Montreal, P. Q. • 326 Central Avenue, Louisville 8, Kentucky

Filter, Pressure

Recovery leaf handles unfiltered residue. (166A)

. . . A new line of pressure leaf filters utilizes a separate recovery leaf to filter residue left in the filter at the end of the batch. This Model HB unit greatly simplifies continuous processes which operate on a number of crude materials. Gains are reported for refineries that change products, formula and treatments. At the end of the regular filtration, residue in the tank is blown through the recovery leaf with air or inert gas. Filtrate is clear because the cake has been held intact throughout the main filtration cycle. —*Process Filters, Inc., Buffalo, N. Y.*



Filter, Self-Cleaning

Ports allow inspection. (166B)

. . . New self-cleaning pressure leaf filter has sight ports to permit inspection of individual leaves. Ports can be dogged down quickly when putting the 12,000 gpm. unit on the line.—*Hercules Filter Corp., Hawthorne, N. J.*

Filter, Self-Cleaning

Jets use fraction of normal backwash. (166C)

. . . New Auto-Jet design improves on other self-cleaning vertical-leaf filters in that tank, screens and jets are said to endure continuous heavy usage. Automatic controls, too, have been perfected to give long operating service. To obtain the maximum filter area within a small horizontal tank, Auto-Jet leaves are mounted vertically on 3-in. centers on a horizontal trunnion. All the area on both sides of each leaf is actively utilized. Thus, a standard 500-ft. unit requires a tank only 84 by 54 in. Filter sizes range from 10 to 1,000 sq. ft. in order to take care of flows ranging up to 1,440,000 gal./day.—*United States Filter Co., Arcadia, Calif.*

Filter, Sintered

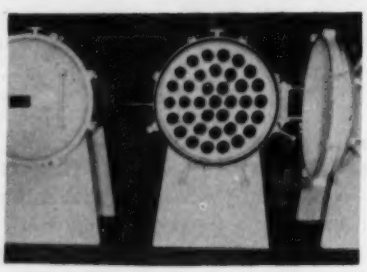
Excels at low differential pressures. (166D)

. . . Sintered filter removes one micron particles from fluids up to 1,000 F. at differential pressures up to 500 psi. At any given flow rate it clarifies better at lower differential pressures than other filters of the same general type.—*Purolator Products, Inc., Rahway, N. J.*

Filter, Tubular

For low-cost, small-volume use. (166E)

. . . An unusual flow pattern provides simplified operation and very low maintenance in a new line of tubular filters. Several tubular elements are housed within one chamber. The liquid enters into individual tubes, then it passes through filter paper and a perforated tube wall into the chamber. Units available have from 1 to 36 tubes with filtration areas from 2.4 to 86.4 sq. ft.—*Industrial Filter & Pump Co., Chicago, Ill.*



Filter Cartridge

Chemical resistant. (166F)

. . . Filter cartridge in 2, 10, 25 and 50 micron grades is fabricated of fibrous glass for high chemical and temperature resistance. It fits standard filter containers.—*Porous Plastic Filter Co., Glen Cove, N. Y.*

Filter Cloth

Treated cotton challenges synthetics. (166G)

. . . Treated cotton filter cloth offers many advantages found in synthetics but costs little more than untreated cotton cloth. Resistant to many chemicals, mildew, shrinkage and wrinkling. Available in the standard construction.—*National Filter Media Corp., New Haven, Conn.*

Filter Cover

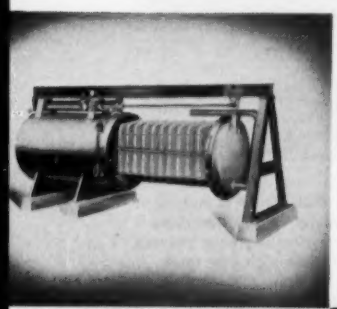
Operates rapidly and easily. (166H)

. . . Now standard equipment on all Model MCR retractable-tank vertical-plate filters is the new Passalaqua speed-lock cover. This easy-to-operate safety cover is approved by ASME. It is particularly useful for pressure vessels frequently opened.—*Sparkler Mfg. Co., Mundelein, Ill.*

What's new in process equipment? . . .

See Industrial

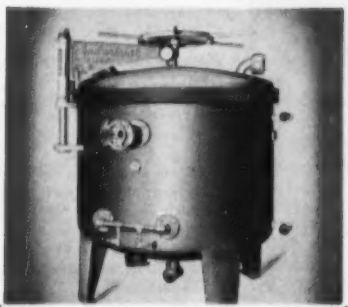
Every one of these units is the latest of its kind . . . with exclusive features to help you improve product quality or save costly materials. When you enlarge or add to your processing lines—see Industrial . . you'll find that something new has been added.



HORIZONTAL FILTERS

These filters offer many features to increase efficiency in filtering operations. Hydraulically operated, quick opening door and fully exposed leaf assembly simplifies cleaning and inspection. Built to ASME Code with self-cleaning features: air wash, sluicing or shaking.

Ask for Bulletin NH-155



VERTICAL FILTERS

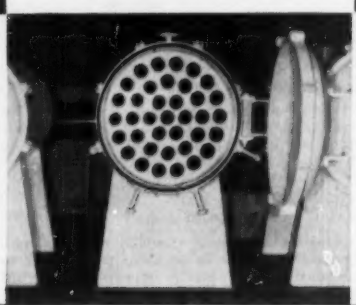
Built to ASME Code in a wide range of materials and sizes. Available with such convenient features as: bottom-opening chambers, clean-out doors, quick-opening covers, jacketed shells . . . and time-saving rapid cleaning devices: air wash, sluicing and mechanical shakers.

Ask for Bulletin 100

TUBULAR FILTERS

New operating convenience for smaller filtration jobs. Ideal for polishing liquids, as a trap filter and as a scavenger for larger filters the cost is less than a scavenger plate. This filter's "inside-out" flow system and the use of simple filter paper liners makes it unusually easy to operate.

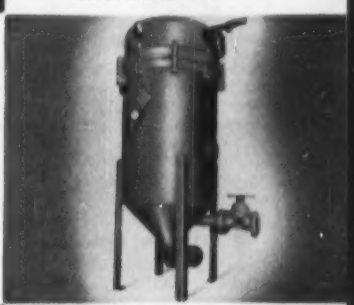
BULLETIN 75-160-755

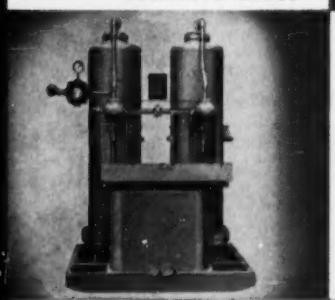


HYDRA-SHOC FILTERS

Clean themselves in seconds without back-flow pumps or filtered water supply. Hydra Shoc is a tubular filter with hard wearing synthetic fabric sleeves. The unusual self-generated pressure system provides a back-surge that instantaneously expands the sleeves, dislodges and drains off the filter cake.

BULLETIN 114

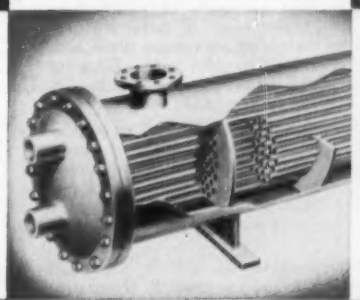




ION EXCHANGERS

With operating costs figured in pennies per thousand gallons, Industrial ion exchangers are specially built for water purification, waste treatment, metal recovery and other solution treatments.

BULLETIN 200-SM



HEAT EXCHANGERS

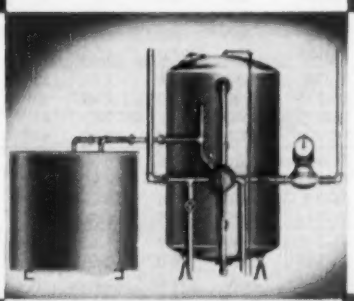
For corrosive or non-corrosive liquids and gases. Industrial builds these to suit the job and can furnish all auxiliary pumps, piping and fittings.

BULLETIN 600-2-354

WATER SOFTENERS

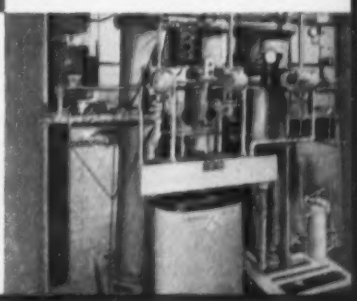
One operation, rapid Zeolite Water Softeners. Fully automatic, semi-automatic or manual controls.

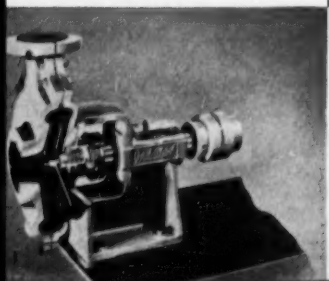
BULLETIN 211



WASTE TREATMENT

For recovery, or destruction of chemicals for disposal. Many Industrial recovery systems have paid out their cost in a few months. Complete service from solution analysis to installation.





CENTRIFUGAL PUMPS

Specially designed rubber lined pumps for corrosion and abrasion resistance. Only a cutaway model can show the many features that spell long life and low maintenance.

BULLETIN 300

CENTRIFUGAL PUMPS · PRESSURE FILTERS · ION AND HEAT EXCHANGERS · RUBBER LININGS · WASTE TREATING EQUIPMENT

Industrial

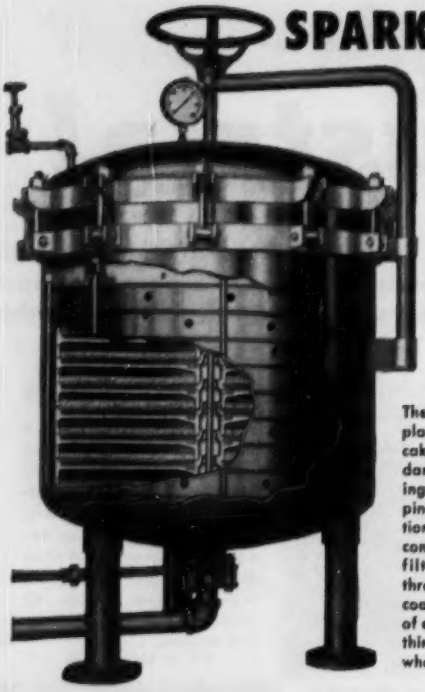
INDUSTRIAL

FILTER & PUMP MFG. CO.

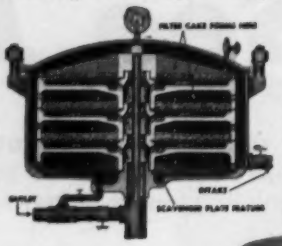
5918 OGDEN AVENUE • CHICAGO 50, ILLINOIS

SPARKLER HORIZONTAL PLATE FILTERS

for fine filtering and polishing of liquids



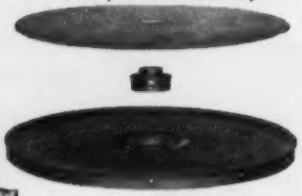
The standard horizontal plate filter . . . with positive cake stability and other operating features unmatched by any other filter.



Cross section of horizontal plate filter showing cake resting on plates without tensile strain. No danger of slipping, cracking, or passing of filter aid. Filter aid is floated into position for an even pre-coat and built-up cake.

The Sparkler horizontal plate provides positive cake stability with no danger of cake cracking, slipping, or dropping even with a variation in pressure or a complete shut down of filtering. No break through is possible. Pre-coating is uniform and of even thickness. A very thin pre-coat is practical when desired.

The three parts of a horizontal plate assembly can be easily taken apart for thorough cleaning, making possible complete sanitation in filtering food products.





Free drainage is a feature of horizontal plate construction. Flow friction is greatly reduced to promote high flow rates.

FOR FILTERING CHEMICALS

Sparkler Filters are available in a wide range of sizes and constructed of a variety of metals to meet practically every requirement in the Chemical and Pharmaceutical industry. Tanks and wetable parts can be supplied in stainless steel, mild steel, bronze, nickel. Monel, Hastelloy or plastic; steam or brine jacketed in capacities up to 10,000 G.P.H. Filter plates are available in two depths, deep plates for liquids carrying a large percentage of solids; shallow plates for liquids carrying a small percentage of solids, the latter providing a larger filtering area in the same size tank.

Sparkler Filters are particularly suited for fine filtration and polishing operations. They are equally efficient for continuous or intermittent operation. Complete recovery of product is obtained by "wash through" or "blowdown" of cake without removal from filter. The Sparkler patented scavenger plate acts as an auxiliary filter with independent control valve, filtering each batch down to almost the "last drop" leaving practically no unfiltered hold over in the bottom of the tank.

Any kind of filter media, screens, or cloths, and all grades of filter paper, together with all types of filter aid such as diatomaceous earth, activated carbon, fullers earth, etc., can be used in a Sparkler filter with maximum efficiency. Filter aids are built up in an even cake and a very thin pre-coat is possible with attendant economies in time and material on a Sparkler horizontal plate.

Perhaps more Sparkler Horizontal Plate Filters are used today in chemical and pharmaceutical processing than any other single type of filter.

FOOD PROCESSING FILTERS — The positive sanitation feature of horizontal plates and tanks is one important reason why Sparkler filters are popular in food processing plants.

LARD AND VEGETABLE OILS are handled to good advantage in Sparkler Filters and a better finished product produced because the first run through the filter is not contaminated by rancid oils and soap particles retained in laundered filter cloths as used in some other methods of filtering.

BEET SUGAR SYRUP — 65° Brix juice is filtered to a highest purity and brilliant clarity in Sparkler Filters. On horizontal plates the filter cake is built up evenly with uniform density and thickness and the cake can be thoroughly washed with a minimum of wash water. Sudden interruptions of house flow or changes in Brix have no effect on cake stability; the cake will not pass filter aid due to cracking or dropping because cake is held in position by gravity and is not dependent on sustained pressure for stability.

INFORMATION YOU SHOULD FURNISH OUR ENGINEERS

Nature of fluid—Inert, volatile, inflammable? Give pH, if available.

Physical conditions—Temperature at filtering point? Viscosity at filtering temperature, in SSU or equivalent, or give SAE rating.

Flow and pressure—Is filter to be stationary or portable? Batch-wise or continuous flow? For installation in pressure line or to be equipped with pump? Desired flow rate in gallons per hour or per minute. If in-line installation, give maximum flow rate, maximum allowable working pressure and minimum.

Nature of solids—Hard, abrasive, sticky, fibrous, flocculent, colloidal? Percentage of solids?

Operating conditions—Length of cycle (time between cleanings) desired? If filter is to have pump and motor, should motor be standard, splash-proof, or explosion proof? Give voltage, phase, cycle of current available for motor.

You are invited to place your filtering problem in the hands of our filtration engineers. They have developed many successful methods of filtering difficult materials and may be able to prescribe a solution to your problem without wasteful experimentation.

Specifications . . . Horizontal Plate Filters

Model No.	Capacity GPH	Area Sq. Ft.	Cake Sp. Cu. Ft.	DIMENSIONS OVERALL Height	Width	Length	Ship. Wt. Lbs. (Approx.)
8-3	30-60	1.0	.073	16"	10"	24"	120-150
8-6	100	2.0	.15	17"	15"	27"	125-140
14-D-4	200	3.2	.48	40"			275-400
14-S-7	400	5.6	.38	40"			325-450
18-D-4	400	6.2	.9	45"			585-735
18-S-7	550	10.8	.67	45"			595-745
18-D-6	500	9.2	1.35	49"	Circle 29" in diameter		625-775
18-S-11	750	17.0	1.16	49"			625-825
18-D-8	650	12.3	1.8	53"			665-865
18-S-15	1200	23.0	1.44	53"			685-885
18-D-12	1000	18.5	2.7	61"			745-945
18-S-23	1800	35.4	2.17	61"			775-975
33-D-7	2000	37.8	6.3	69"	44"	x 66"	1505-2205
33-S-11	3000	60.0	4.9	69"	44"	x 66"	1500-2200
33-D-9	2600	48.6	8.0	74"	44"	x 66"	1635-2335
33-S-14	3600	75.5	6.3	74"	44"	x 66"	1650-2350
33-D-12	3500	64.8	10.8	81"	44"	x 66"	1835-2535
33-S-19	6000	100.0	8.5	81"	44"	x 66"	1900-2600
33-D-17	5000	91.8	15.3	96"	44"	x 66"	2155-2855
33-S-28	8500	151.2	12.6	96"	44"	x 66"	2350-3050

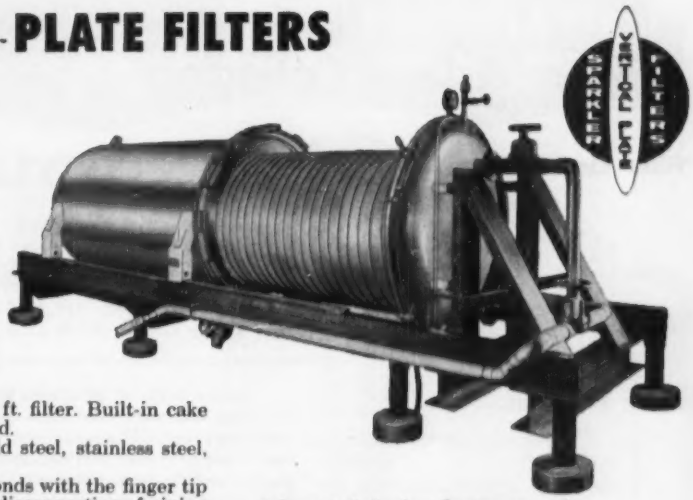
Rubber-lined tank, molded composition plates and rubber-lined piping available in certain 18 and 33 inch sizes. Specifications on request. No scavenger plate in rubber-lined construction.
All standard models available in carbon steel, stainless steel, pure nickel or monel, bronze, Hastelloy, and Inconel.

SPARKLER MANUFACTURING CO. · MUNDELEIN, ILL.

SPARKLER VERTICAL-PLATE FILTERS

Heavy Duty Large Capacity

MODEL MCR
Retractable Tank Filter



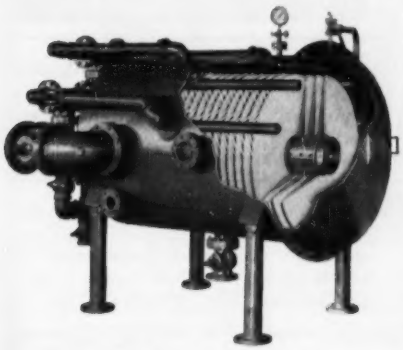
This filter will accommodate products which have a heavy residue. Plates can be spaced at any distance apart to allow for a cake thickness up to 3" or more. Cake can be reduced to a semi-dry condition with blow down and removed by hand scraping or in some cases merely tapping the edge of the plate. This solves the sewer disposal problem with a heavy cake which frequently amounts to a ton in a 1000 sq. ft. filter. Built-in cake flush off spray tubes can be furnished when desired.

The filter wetting parts can be supplied in mild steel, stainless steel, Hastelloy or other metals.

One man can open this filter in a matter of seconds with the finger tip automatic control power opening mechanism. No disconnecting of piping is necessary, and the filter seal of the plates is not broken in opening. The self-sealing cover is released by a single lever movement. No head room is required above filter to open and clean.

Heavy products such as Tall Oil, and like oils, primary beer filtration, etc., are filtered very successfully in the MCR retractable tank filter.

Advanced design features make this filter the logical choice of those who want the best.



MODEL SCJ *Heavy Duty Water Filter*

Available in capacities up to 5,000,000 gallons per 24 hr. operation.

The Sparkler SCJ filter introduces a new phase in large volume filtration of water. Now it is possible to employ the high quality, fine filtration characteristics of a diatomite filter for large volume plant water supply, municipal water works, and swimming pools. Clean pure water can be obtained in any required volume from sources such as lakes, rivers, and wells. The SCJ diatomite filter will remove all suspended matter either colloidal or solid, such as silica sand, algae, organic material, silt, etc. Bacteria is reduced 80% to 100% depending on the type of bacteria and the grade of diatomite used as a filter aid. Thus reducing the required chlorination.

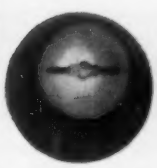
Single units capable of handling 5,000,000 gallons of water per day are available. Multiple units can be engineered into a system for larger requirements.

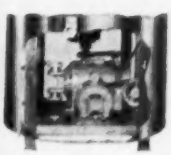
Less than 0.2% of water is required to backwash and clean the largest filter units, a complete fresh pre-coat applied and the filter ready to resume service in 15 minutes.

Operation is simple, no highly skilled specialized personnel is required to insure efficient performance.

Many SCJ filter installations are now operating in industrial plants and in municipal water supply systems with complete satisfaction.







Sparkler New Type Combination Unit Slurry Feeder for Diatomite and other Filter Aids

The important feature of this new Sparkler combination unit slurry feeder is the slow speed agitator operating at the bottom of the tank, that has the advantage of not breaking down the natural cellular structure of diatomite thus preserving the full porosity of the diatomite cake. A much better high flow filter cake is built up with slurry from this feeder.

The top of the tank is fitted with a removable cover to keep slurry clean and sanitary. One motor enclosed with automatic feeder in the base of the unit operates both feeder and agitator.

Tanks and agitator can be supplied in mild steel, stainless steel, or other metals to meet requirements.

All sizes and types of slurry tanks, surge and supply tanks, with or without feeders, can be furnished in any metal as separate equipment.

Model MCR Filter Capacities

Model No.	Sq. Ft. Per Plt.	Sq. Ft. Per Filter	C to C of Plates	Cu. Ft.* of Cake
MCR-64-24	42	1008	4	84
MCR-64-18	42	756	4	71.3
MCR-46-23	22	506	3½	42.1
MCR-46-19	22	418	3½	34.8
MCR-46-16	22	352	3½	29.3
MCR-46-14	22	308	3½	25.6
MCR-46-11	22	242	3½	20.1
MCR-34-17	12	204	3¼	17
MCR-34-13	12	156	3¼	13
MCR-34-11	12	132	3¼	11
MCR-28-13	8	104	3	8.6
MCR-14-6	1.8	10.8	3¼	.9

* Cubic feet of cake based on 1" thick cake.

Model SCJ Filter Capacities

Model No.	Filter Area Sq. Ft.	Pipe Conn. Inches	Approx. Floor Area (Feet)	GALLONS PER DAY* 1 GPM/Ft.²	2 GPM/Ft.²
Model SCJ 24-5	25	3	5x2	36,000	72,000
Model SCJ 24-9	50	3 or 4	5x3	72,000	144,000
Model SCJ 24-13	75	3 or 4	5½x3	108,000	216,000
Model SCJ 33-9	100	4 or 6	6½x3	144,000	288,000
Model SCJ 33-13	150	6	7½x5	216,000	432,000
Model SCJ 33-18	200	6	8½x5	288,000	576,000
Model SCJ 40-16	250	6 or 8	8½x6	360,000	720,000
Model SCJ 40-19	300	6 or 8	9x6	432,000	864,000
Model SCJ 40-22	350	6 or 8	9x6	504,000	1,008,000
Model SCJ 40-25	400	6 or 8	9x6	576,000	1,152,000

Larger capacities up to 2000 sq. ft. can be engineered. (*) Lower or higher flow rates (FPM/Ft.²) may be used when advantageous to the problem involved.

Service Representatives in Principal Cities • Plants at Galt, Ontario, Canada • Amsterdam, Holland

Filter Elements

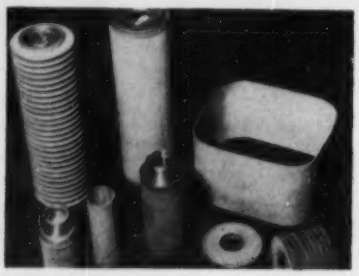
Of porous stainless for problem jobs. (170A)

. . . Faced with an increasing number of filtration problems under difficult conditions Cuno has added Poro-Klean porous stainless steel elements to its filter line. Available in various grades of stainless, these elements resist most corrosive action, and temperatures above 1,000 F. They can be built to handle very viscous fluids at differential pressures in excess of 2,000 psi. These porous metallic elements can be cleaned for reuse over an indefinite number of filtration cycles. Being metal, they can be sterilized. Because there are no fibrous components they assure a filtrate free of fibrous contaminants.—*Cuno Engineering Corp., Meriden, Conn.*

Filter Elements

For vacuum thickener. (170B)

. . . A new filter element now is available for use with the Edco Vacuum tube-thickener. Elements are assembled from gear-like sections molded of plastic and rubber. The gear-like contour supports the filter fabric and provides channels for drainage of the filtrate. The vacuum tube-thickener concentrates slurries that are hard to filter on conventional filters, or are difficult to settle.—*Equipment Development Co., Montclair, N. J.*



Filter Felt

Retains fine solids, has high filtration rate. (170C)

. . . A new chemical-resistant synthetic filter felt is made of tightly compacted resin-bonded fibers of Dynel. Principal uses will be for pressure filters, centrifuges. It has superior chemical resistance, does not shrink, holds its shape. Easy to clean, it retains fine solids despite high porosity.—*Filtration Fabrics Div., Filtration Engineers, Inc., Newark, N. J.*

Housing, Filter

For one-man, speedy cartridge replacement. (170D)

. . . Containing micronic, full-flow filter cartridges, these newly engineered filter housings are aimed specifically at process liquids and high-capacity lube systems on engines and machinery. The long-effective-life cartridges are easily replaced by one operator. Capacities range from 80 to 500 gpm. of clarified liquid.—*Cuno Engineering Corp., Meriden, Conn.*

Pump, Filter

For corrosives. (170E)

. . . Filter pump LSIN-20 is a self-priming unit for filtering corrosives at 200-300 gph. rate. The density of filter tubes is variable to trap 1-150 micron particles.—*Sethco Manufacturing Co., Brooklyn, N. Y.*

Scrubber, Gas

Removes low-micron fumes and odors. (170F)

. . . A new dust control unit, the Type A hydro precipitator scrubber, removes microscopic solids, fumes and odors from exhaust. Efficiency to 99% is reported with dust loadings of 5 grains/cu. ft. and 70% of the solids below 5 micron particle size.—*The Johnson-March Corp., Philadelphia.*

Separator, Entrainment

Three-fold gain in high-temperature service life. (170G)

. . . By twisting structure of its knitted-wire mist eliminator in a different fashion, Metal Textile Corp. has licked tough operating problems, created better all-around device for removing liquid entrainment. In refinery operation, entrainment separators are vital in high-temperature vacuum flashers. They stop liquid carry-over which causes catalyst poisoning in down-stream equipment, poor color in overhead. At high temperature, coke may build up in separator mesh to cause increased pressure drop, frequent shutdown. Revamped construction of new mist eliminator reduces coking rate and thereby extends service life threefold. Comparable gain is reported for other applications where solids are part of the entrainment, or are created by operating conditions. On installations where entrainment is completely liquid and does not solidify new Metex Hi-Thruput Herringboned mist eliminator has one-half the pressure drop of its predecessor and works with equal effectiveness at velocities 10 to 15% higher.—*Metal Textile Corp., Roselle, N. J.*

Snubber, Gage

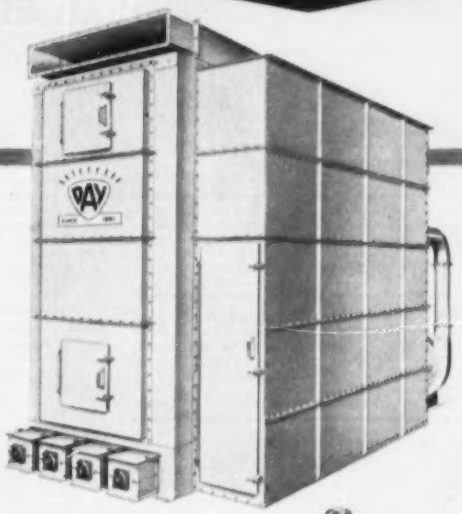
Protects instruments in high-pressure use. (170H)

. . . A new high-pressure gage snubber protects instruments against line surges and pulsations on systems having total pressure increments as high as 60,000 psi. Snubber element consists of a series of porous metallic disks assembled inside a housing.—*Chemiquip Co., New York, N. Y.*

DUST CONTROL | **BULK STORAGE** | **PNEUMATIC CONVEYING**

DAY PRODUCTS

Serve the Chemical Industry



...CONTROLLING DUST

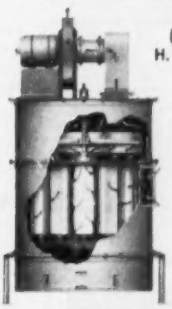
DAY "AC" Reverse-Jet DUST FILTER ● Dollar for dollar, feature for feature, you get more for your money with a DAY "AC" filter. Economical first cost and low maintenance PLUS the fact sub-assembly by DAY saves up to 75% on installation costs. ● Felted filtering media captures sub-micron dust particles with 99.99+% efficiency. Media porosity is maintained by self-adjusting, high pressure, reverse-jet blow rings. ● DAY filters occupy less floor space—need less headroom—are furnished to operate on suction or pressure. ● May be installed inside or outside; outside units completely weatherproof. **Write for Bulletin 539 for complete facts and engineering data.**



DUAL-CLONE DUST SEPARATOR

Exclusive DAY design provides high efficiency with low horsepower requirements. **Write for Bulletin 49DC.**

(Licensed by H. J. Hersey, Jr.)



TYPE "RJ" DUST FILTER

Surge of high velocity reverse air maintains filter media porosity of this "packaged" dust filter. 99.99+% efficiency. **Write for Bulletin 560.**



TYPE "G" EXHAUST FANS

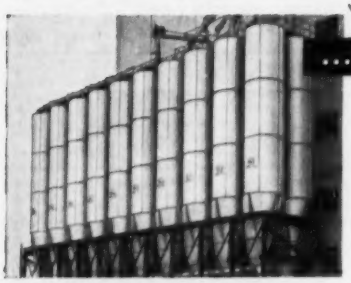
High air delivery per horsepower required. Statically and dynamically balanced; designed exclusively for dust control applications. **Write for Bulletin 471.**



DAY UNIT DUST CONTROLLERS

Complete, low cost unit combines high efficiency of DAY Dual-Clone and Exhauster. Ideal for remote locations. **Write for Bulletin 510.**

A SINGLE UNIT OR A COMPLETE DUST CONTROL SYSTEM



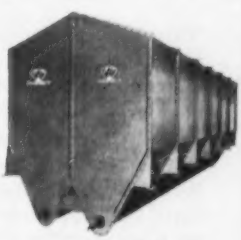
DAY Vertical Type Bulk Storage Bins

...HANDLING AND STORING BULK MATERIALS

Vertical or horizontal bins, special sizes or groups furnished to meet production needs; air lock rotary valves, twin screw feeders and other auxiliary equipment optional. DAY bins need no field riveting, soldering or welding. Built and shipped in easily erected bolted sections. **Write for Bulletins 529 and 549.**



AIR LOCK ROTARY VALVE



HORIZONTAL TYPE BULK MATERIAL BIN

INDIVIDUAL BULK EQUIPMENT UNITS OR A COMPLETE BULK MATERIAL SYSTEM

...PNEUMATIC CONVEYING

DAY Pneumatic Conveyor equipment and systems provide a modern method of bulk material handling. Self-cleaning to prevent contamination or product deposits in system. Speed of operation improves plant efficiency. Write for details.

75 YEARS DAY BUILDING SERVING INDUSTRY SINCE 1881

The DAY Company

856 Third Ave., N.E., Minneapolis 13, Minn.
P. O. Box 70N. Ft. William, Ontario

Branch Plants: Buffalo, Ft. Worth, Toronto
Representatives in Principal Cities

Filters & Dust Collectors

TECHNICAL LITERATURE

Closing Devices.....New Sperry Handdraulic closing device—easiest to install & operate—brings filtration economy to new or existing filter presses. Booklet covers simple erection & operating directions.
172A D. R. Sperry & Co.

Collectors, Multi-Wash.....For the efficient removal of air-borne contamination (dust, fumes, vapors, acid gases and odors) and recovery of product thru multiple washing action. Details
175 Claude B. Schneible Co.

Dust Collectors.....Describes National's Hydro-Filter—the triple-action dust collector. Covers operating principle, outstanding features, construction & design, dimension & application data, etc. Bulletin 55.
178 National Dust Collector Corp.

Dust Collectors.....Describes the type "CW-1" centrifugal wet dust collector. Contains photos, line drawings, tables and complete data on the countercurrent, wet collector of tower construction. Bulletin 919.
172B Pangborn Corp.

Dust Collectors.....Model D Aeroturn dust collector offers high-efficiency filtering & reverse-air-jet filter cleaning in a factory assembled & tested unit. Capacities from 500 to 7200 cfm. Bulletin No. 3.
172C Turner & Hawa Engrg. Co.

Dust Collectors.....Describes company's line of dry centrifugal collectors . . . designed to handle large exhaust volumes containing dry, granular dust in large concentrations. Request Bulletin No. 291.
165e American Air Filter Co.

Dust Collectors.....Product bulletin furnishes detailed information on the Fabric Dust Arrester . . . recommended for handling extremely fine dust or dust that must be reclaimed dry. Bulletin No. 279.
165b American Air Filter Co.

Dust Collectors.....Descriptive and illustrated product literature on the Hydro-static Precipitator . . . a wet-type collector designed for handling heavy duty loadings of all sizes. Bulletin No. 277.
165a American Air Filter Co.

Dust Collectors.....Lowest priced wet dust collector in its class (units of 1500 to 50,000 cfm capacity designed for high efficiency dust collection, including extreme fines). Request Bulletin No. 274.
172O American Air Filter Co.

Dust Collectors.....Completely illustrated bulletin describes the numerous advantages and design features of the Simon Suction Filter Dust Collector and the Entoleter Impact Mill. Request your copy of Form 4722-7-54.
333b Safety Car Heating.

Dust Collectors.....New booklet, "The Collection and Recovery of Industrial Dusts" is available upon request. It describes the "SF" electric precipitators and how they meet all 5 basic requirements for top efficiency.
172E Buell Engrg. Co.

Dust Collectors.....25 tube D-450 Dustex collector handles 1640 cfm at 80°F with a 6" w.g. pressure drop. Operation is maintenance free. Request information on simplified test method which proves performance.
173 *Dustex Corp.

Dust Collectors.....Describes features of the Majac power-driven dust collector & fractionator: separates particles down to .1 micron; operates wet or dry; functions at temperatures to 800° F; etc. Illustrated.
173F Majac, Inc.

Dust Collectors.....Maximum filtering efficiency, bag cleaned uniformly and automatically, overcleaning eliminated to prolong bag life, easy to assemble in less space. For further details, request Aeroturn Booklet.
173G Koppers Co.

Dust Collectors.....In almost every type of industry . . . users have found high efficiency, simplicity & economy of Dustube collectors a difficult combination to equal for top performance. Bulletin No. 372.
172H Wheelabrator Corp.

Dust Collectors.....New self-cleaning collector offers continuous automatic operation, constant air volume and suction, uniform air flow resistance at low cost. For complete details, request Bulletin No. 915.
173I Pangborn Corp.

Dust Control.....Analyses of how dust control equipment solves the problem of recovering valuable dusts—or controlling harmful dusts. Makes available Bulletin covering complete technical information. No. 800.
172J Dracco Corp.

Dust Control.....The complete, low cost Day unit dust controller combines high efficiency of the Day "Dual-Clone" and Exhauster. Ideal for remote locations. For complete, comprehensive information request company's Bulletin 510.
171b *Day Co.

Dust Control.....Ducon Dynamic centrifugal wash collectors provide the highest efficiency obtainable in wet type collectors. The UW-3 unit reclaims valuable fines. Descriptive literature gives details.
172K Ducon Co.

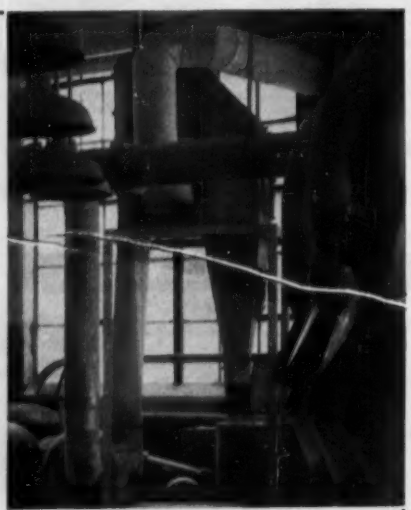
Dust Control.....Pangborn engineers help solve your dust problems—line of wet or dry dust collectors can save time, trouble & money. See how varied industries are benefited in "Out of the Realm of Dust."
172L Pangborn Corp.

Dust Control.....Sly flat bag dust filters get all the dust. Pioneers and leaders in industrial dust control, they have a complete range of equipment for all process operations. Request Dynaclone Booklet.
172M W. W. Sly Mfg.

* From advertisement, this issue.

℞ for efficient dust control...
DUSTEX

This 25 tube D-450 Dustex collector recovers airborne coating material from 24 coating pans during the manufacture of Doan's Pills at the Foster-Milburn Co., Buffalo, N. Y. The Dustex unit handles 1640 cfm at 80°F with a 6" w.g. pressure drop. Enthusiastic endorsement by coating department employees, reduction of good housekeeping costs, and recovery of material has proven the worthiness of this Dustex collector to management. Operation is maintenance free.



If you have a dust problem that hampers employee efficiency, or results in waste of valuable material, write for information on our simplified test method which proves performance . . . *before purchase.*

P.O. Box 2520 DUSTEX CORP. Buffalo 25, N. Y.

Need some equipment?

Then you'll find this issue's Inventory of New Equipment right up your alley. It's a digest of the past year's major new developments in process equipment, the first complete roundup of its kind. You'll find it a handy tool for years to come (p. 145).

Dust Filters.....The Day "AC" dust filter offers many features: high filtering efficiency; automatic continuous operation with minimum filter; higher filtering rates; great economy; etc. Data in Bulletin 528-R.
173A Day Co.

Dust Filters.....Read why the Hersey reverse jet principle is the most significant improvement in dust filter design in more than half-a-century, in "Reverse Jet Dust Filter Facts," Bulletin 559.
171c Day Co.

Dust Filters......"Type RJ" dust filter is an economical, high efficiency, automatic-continuous dust filter which can be furnished for pressure or vacuum operation. For more information, request Bulletin 560.
171d Day Co.

Dust Separators.....The "Dual-Clone" dust separator, an exclusive Day design, provides high efficiency with low horsepower requirements. For complete facts and engineering data request company's Bulletin No. 49DC.
171e *Day Co.

Filter Aids.....Generously illustrated reference entitled "Get Perfect Water Clarity with Celite Filtration," furnishes data on filtration of potable water, process water and plant wastes. 12 p. booklet.
173B Johns-Manville.

Filter Aids.....For clearest filtration, use Solka-Floc filter aid. 99.5% chemically pure cellulose, Solka-Floc comes in a wide range of grades to meet your specific needs. Request literature and samples.
173C Brown Co.

Filters.....Describes Denver disc, drum & laboratory filters. Contains photos of actual installation, drawings & specifications of machines, & facts about construction & operation. Bulletin No. FG-B1.
173D Denver Equipment Co.

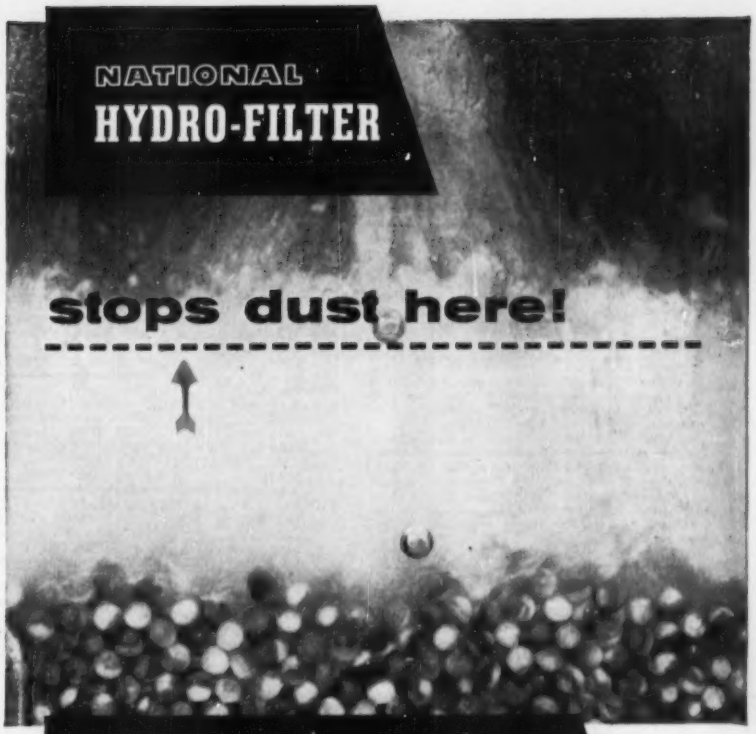
Filters.....Makes available descriptive booklet covering the Sel-Rex Double Duty Filters . . . for use in electroplating, chemical processing, pharmaceuticals, food and beverages, paints and varnishes, etc.
173E Bart-Messing Corp.

Filters.....Fully illustrated, 8 p. Bulletin covers rotary suction cell filters, pulp filters, bleaching plants, filter washing plant, cylinder wet machines, and Imperial Dryers for the chemical and process industries.
173F Krauss-Maffei-Imperial.

Filters.....Improved design gives high production at low cost for existing process. Jacketed construction permits heating or cooling where accurate temperature control is required. Details in Bulletin No. 431.
173G R. P. Adams Co.

Building up files?

Then you can cash in right now on this issue's comprehensive inventories of Technical Literature. You'll find them to be master checklists of the current and latest literature on any topic: plants, processes, chemicals, equipment. Easy to get, too. Simply write the code numbers on one of the postcards inside back cover then mail.



Unique turbulent area assures positive dust collection at constant efficiency . . . to the micron range

Here is the "heart" of the Hydro-Filter principle of dust separation. This violently turbulent area of water, bubbles and mist is produced by the countercurrent action of air against water. Constant long contact between the air being cleaned and the water which is doing the cleaning produces a scrubbing action which is positive, thorough and unaffected by variation in volume and velocity of flow. Dust is entrained by any, or all, of three means: (1) Entrapment within falling water droplets; (2) Impingement on bubble surfaces; (3) Impingement on wetted surface of glass spheres.

As the photo indicates, the entire collection area is continually flushed. There are no dead areas to corrode or erode. No moving parts to "load up" and reduce efficiency. Maintenance is a matter of *minutes a month*. Collection of dust to micron size is continuous and sludge removal automatic with the National Hydro-Filter.



Write for Bulletin 55 . . .

See why and how separating efficiencies of up to 98.9% on foundry shakeout dust are possible practical—and continuous with Hydro-Filter!

NATIONAL

Dust Collector Corp.

636 Machinery Hall Bldg., Chicago 6, Illinois

Subsidiary of National Engineering Company, Manufacturer of Simpson Mix-Mullers.

Filters & Dust Collectors

TECHNICAL LITERATURE
Filters, Disc—
Washers, Sub-Surface

Filters.....The Eimco-Burwell filters, available in plate and frame types, offer automatic, practically continuous filtration. Company makes available complete technical data on filtration of products.
174A Eimco Corp.

Filters.....Dollinger Corp. offers a new series of bulletins called "Filter Facts." Filters for every industrial & ventilating need—liquid, pipe line, low & high pressure, etc. For full details, request Vol. 1, No. 1.
174B Dollinger Corp.

Filters.....New built-to-order vertical filters solve complex problems & are easily adapted for special uses. For details on flow systems, special equipment, filter & leaf construction, request Bulletin No. 111.
174C Industrial Filter & Pump.

Filters.....Cuno's new Super Auto-Klean filter now makes possible economical, compact, micronic filtration at high flow rates & eliminates the need for replacement cartridges. Request Catalog SAK-057.
174D Cuno Engrg. Co.

Filters.....Informative, complete data on construction, installation, testing and performance of the M-S-A Ultra-Aire Space Filter with its new filter media is contained in new 4 p. Bulletin No. 1505-3.
174E . Mine Safety Appliances Co.

Filters, Air.....Covers line of Poro-Stone filters for compressed air & gases. Filters give you: increased production; longer tool life; less maintenance; easy cleaning; etc. Illustrated Bulletin No. 117.
174F K. P. Adams Co.

Filters, Air.....New, self-servicing Roll-O-Matic features renewable media filter curtain of bonded glass fibers in roll form. For complete details of renewable media air filter, write for Bulletin No. 248.
176G American Air Filter Co.

Filters, Air.....Deep bed type dry filter features ultra-high collection efficiencies, compact design & ease of maintenance. Unit utilizes wide range of media. Complete information in Bulletin No. 237.
174H American Air Filter Co.

Filters, Air.....Mechanical Filter for ventilating & air conditioning service. Airmat PL-24 gives highest efficiency plus low initial cost. Requires no oil, no water for washing. Complete details in Bulletin 230.
174I American Air Filter Co.

Filters, Disc.....Special, patented design of segments in filters use both gravity & Vacuum to give a drier filter cake. Drainage is complete & positive with no blow-back. Details contained in Bulletin F9-B2.
174J Denver Equipment Co.

Filters, Disc & Agidisc, Vacuum.....Designed for filtration of slurries with solids concentration of 1 to 20% and greater. Have the advantage of lower floor space per square foot of filter area. See product bulletin.
317-20d *Eimco Corp.

Filters, Drum & Disc Pressure.....Applied where temperature and vapor pressure limitations on vacuum require pressure, or where toxic or flammable slurries require an enclosed construction. Request product bulletin.
317-20e *Eimco Corp.

Filters, Drum, Vacuum.....Designed for filtration of slurries with solids concentration of 1 to 20% and greater, with slow or rapid cake formation and slow, medium or fast settling rates. Request product bulletin.
317-20c *Eimco Corp.

Filters, Horizontal.....Highly efficient with capacities up to 1950 sq. ft. of filtering area. Simplifies recovery of filter cake. "Lift-out" leaves make maintenance & cleaning easy. Bulletin No. NH-155.
167a Industrial Filter & Pump.

Filters, Horizontal Plate.....The new Niagara "Batch Miser" Horizontal Plate Filter leaves no heel at the end of the cycle. Features no tie rods and less down-time. Request Bulletin with complete data.
174K Niagara Filter Div.

Filters, Horizontal Rotary Vacuum..... Versatile, fast acting filter has NU drive. Offers high capacity, fast dewatering and excellent cake wash. For further information on compact filter, request Bul. 400.
174L Cleveland Worm & Gear.

Filters, Horizontal Vacuum.....Bird-Prayon continuous, rotary, horizontal vacuum filter combines: super efficient multi-stage washing; high operating efficiency; low operating cost. Bulletin No. BP-2-55-5M.
174M Bird Mach. Co.

Filters, Laboratory & Pilot Plant..... Proportional sized units suitable for laboratory work available in 3 and 6 square foot sizes for disc units and 4 or 8 square foot sizes for drum units. See product bulletin.
317-20h *Eimco Corp.

Filters, Liquid.....12 p. offers specifications, engineering & performance data, photos & descriptions of recommended types of filter media, check list of liquids that can be filtered, etc. Bulletin D-1L.
174N Dollinger Corp.

Filters, Liquid.....Company offers 12 p. bulletin containing engineering & performance data, photos, descriptions of filtering media, recommended use of each, etc. on its Staynew filter. Request Bulletin 300.
174O Dollinger Corp.

Filters, Millipore.....Covers the Millipore Filter . . . the all-purpose filter designed for & proved in the atomic energy field. Describes the filter as a monitoring device—as a research tool. Illustrated.
174P Millipore Filter Corp.

Filters, Pan.....Designed for filtration of slurries with a solids concentration of 20% or greater, with very rapid cake formation and settling rate. Combination of vacuum and gravity speeds liquid flow. Bulletin.
317-20b *Eimco Corp.

Filters, Pipe Line.....Staynew pipe line filters for clean dry air in air operated instruments, air operated tools, pneumatic controls, industrial processes. For further details, Request Bulletin 200.
174Q Dollinger Corp.

* From advertisement, this issue.

HERCULES FILTERS

Pressure Leaf, Sheet, and Laboratory types; asbestos and asbestos sheets.

Literature available on request:

- **16 page catalog—"Manual and Self-cleaning Pressure Leaf Filter,"** covering principles of filtration, construction, operation, installations, blueprints of "Rapidor" and "Rotojet" and other valuable data.
- **"Industrial Sheet Filters"—4 page brochure** giving application, construction, sizes, flow rates, etc. of Hercules Sheet Filters.
- **"Laboratory Filters"—Data Sheet**
- **"Loose Asbestos and Asbestos Pads"—Data Sheet.**
- **Hercules "Fact Finder"—Monthly house organ** with installation and performance data.

Hercules Filter Corp.
159 ETHYL AVENUE
HAWTHORNE, NEW JERSEY

For More Information . . .

Here's how to get more information on any item in this expanded Equipment Inventory. Simply write the item code number on one of the Reader Service postcards inside the back cover of this issue. Mail it and information comes to you from the manufacturer. You can also write directly to the producer at the address given. But for speed and convenience take advantage of Reader Service postcards.

Filters, Plate & Frame.....Eimco-Burwell filter gives faster opening and closing of plates on the frames; highly efficient washing, uniform cake density over entire surface of filter media, drier cakes. Bulletin.
317-20f *Eimco Corp.

Filters, Pressure.....Covers high capacity, high efficiency, horizontal tank, vertical leaf filter designed for maximum ease & speed of operation at lowest operating & maintenance cost. Bulletin PF-2-55-5M.
175A Bird Mach. Co.

Filters, Pressure.....Covers closed-type pressure filter for minute filtration of liquids, chemicals, oils & fats. Outlines use & elimination of costly maintenance & high labor costs. Bulletin HH 104.
175B U. S. Hoffman Machy. Corp.

Filters, Pressure Leaf.....For flow rates two to five times greater than cloth covered presses; positive removal of all suspended solids to desired degree of clarity; etc. Find details in Catalog No. NC-1-53.
175C Niagara Filters Div.

Filters, Sand.....Automatic backwash sand filter is a departure from standard filtration equipment—it backwashes its filter bed automatically without interrupting normal filtration. Bulletin 46-A-11.
175D Hardinge Co.

Filters, String Discharge.....You can improve production rates at lower cost in numerous of your filtration operations with the continuous FEinc String Discharge Filter. For details, request Bulletin No. 103.
175E Filtration Engrs.

Filters, Tank.....Use Sparkler MCR retractable tank filters and collect cash dividends in labor savings and operating economies. Descriptive product literature covers features and operation.
175F Sparkler Mfg. Co.

Filters, Tubular.....Describes new tubular filters by Industrial . . . with important new features due to flow from inside of tube. Covers features and operation in complete detail. Bulletin TS-160-755.
167c Industrial Filter & Pump.

Filters, Tubular.....New Hydra-Shoc filter creates own air pressure for fast self-cleaning . . . small floor space; eliminates filtered water for cleaning & back flow pumps. Request special Bulletin 114.
167d Industrial Filter & Pump.

Filters, Vacuum & Pressure Precoat..... Used in the filtration of low viscosity materials where very thin cakes must be discharged or in large scale solution clarification. For details, request product bulletin.
317-20g *Eimco Corp.

Filters, Vertical.....Vertical filters built to ASME code, feature: bottom-opening chambers, clean-out door, quick-opening covers, jacketed shells, etc. For more complete information request Bulletin 100.
167b *Industrial Filter & Pump.

Filters, Water.....A complete description of standard sizes of water filters, for use with filter-aid to handle 8 gpm to 939 gpm, with typical flow sheet contained in detailed bulletin. Release No. 214 upon request.
175G Micro Metallic Corp.

Filtration.....Company makes available valuable bulletins: B-12, General Filtration; C-22, Use in Paint, Varnish & Polishes; F-52, Use in Paper & Pulp; F-552; & Dry Cleaning Plants Manual.
175H Dicalite Div.

Filtration, Celite.....Removes colloids and other suspended impurities; requires no coagulants; removes microscopic solids; plant occupies small area. For further details, request Bulletin No. FA-51A.
175I Johns-Manville Corp.

Filtration Equipment.....Sperry makes available a catalog complete with charts, tables, & diagrams to help in the operation, maintenance & selection of filtration equipment. Request your copy. Catalog 7-E.
175J D. R. Sperry & Co.

Scrubbers, Fume.....Engineering News-Letter (Volume 1—Number 1) tells how the SK Fume Scrubber provides simple, inexpensive solution to a manufacturer's hot air and ammonia fume problem. Fully illustrated.
175K Schutte & Koerting Co.

Scrubbers, Gas....Installations of this equipment successfully handle difficult gas scrubbing problems. Help stop air pollution and recover valuable materials. World-wide usage. Bulletins M-102 & M-103.
175L Chemical Construction Corp.

Vapo-Sorbers.....Continuously remove petroleum vapors, dirt & liquids from air & gases. Built to last—no moving parts—filters & chambers are easily cleaned & replaced. Complete details in Bulletin No. SC-1047.
175M Selas Corp. of America.

Washers.....A stationery-plate-type electronic precipitator which, with the addition of the Type H Washer, provides for washing of collector plates by a set of traveling spray nozzles. Request Bulletin No. 252.
175N American Air Filter Co.

Washers, Air.....Compact and sectional in construction, for quick, easy erection. Available in many standard sizes, also custom designed for special applications. Write for more complete information.
175O Mario Coil Co.

Washers, Air.....New type ARco air wash systems, acid-proof washers eliminate 90% to 99% toxic fumes and corrosives from exhaust gases. For additional information request illustrated Bulletin 256.
175P Automotive Rubber Co.

Washers, Fume.....The cyclonaire is only a fraction of the size of custom built units of comparable capacity. It is a wet bed scrubber and is packed with Intalox saddles. For details, request Bulletin FW-5.
175Q U. S. Stoneware.

Washers, Log, Welded Steel.....Smooth running, highly efficient machines for removing tough clays, soft rock & other materials from iron & manganese ores, barytes, zinc, ochre, etc. Data in Bulletin WLO-1253.
175R McLanahan-Stone Corp.

Washers, Sub-Surface..... Highly informative paper discusses the development of the "Sub-Surface Washer" . . . used in Demineralizers, Zeolite Softeners and Filters. Request copy of illustrated Technical Reprint T-139.
175S Graver Water Conditioning.

Building up files?

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SCHNEIBLE

Somewhere in here . . .



is the solution to your air scrubbing problem

Yes, somewhere in these files, representing more than two decades of leadership in the wet collection field, is a problem similar to yours . . . a problem *solved* by Schneible Multi-Wash Collectors.

Dust, fumes, condensable vapors, soluble or acid gases and odors, all have yielded to the highly efficient Multi-Wash action developed by Schneible engineers.

Multi-Wash units are flexible, too. They can be constructed of any of several corrosion resistant alloys, or have their interior surfaces covered with special coatings. Also, plain carbon steel can be used in many cases by recirculating an alkaline solution, resulting in large savings to the user.

Why not write TODAY for more information, or call us direct? We are in business to serve you.

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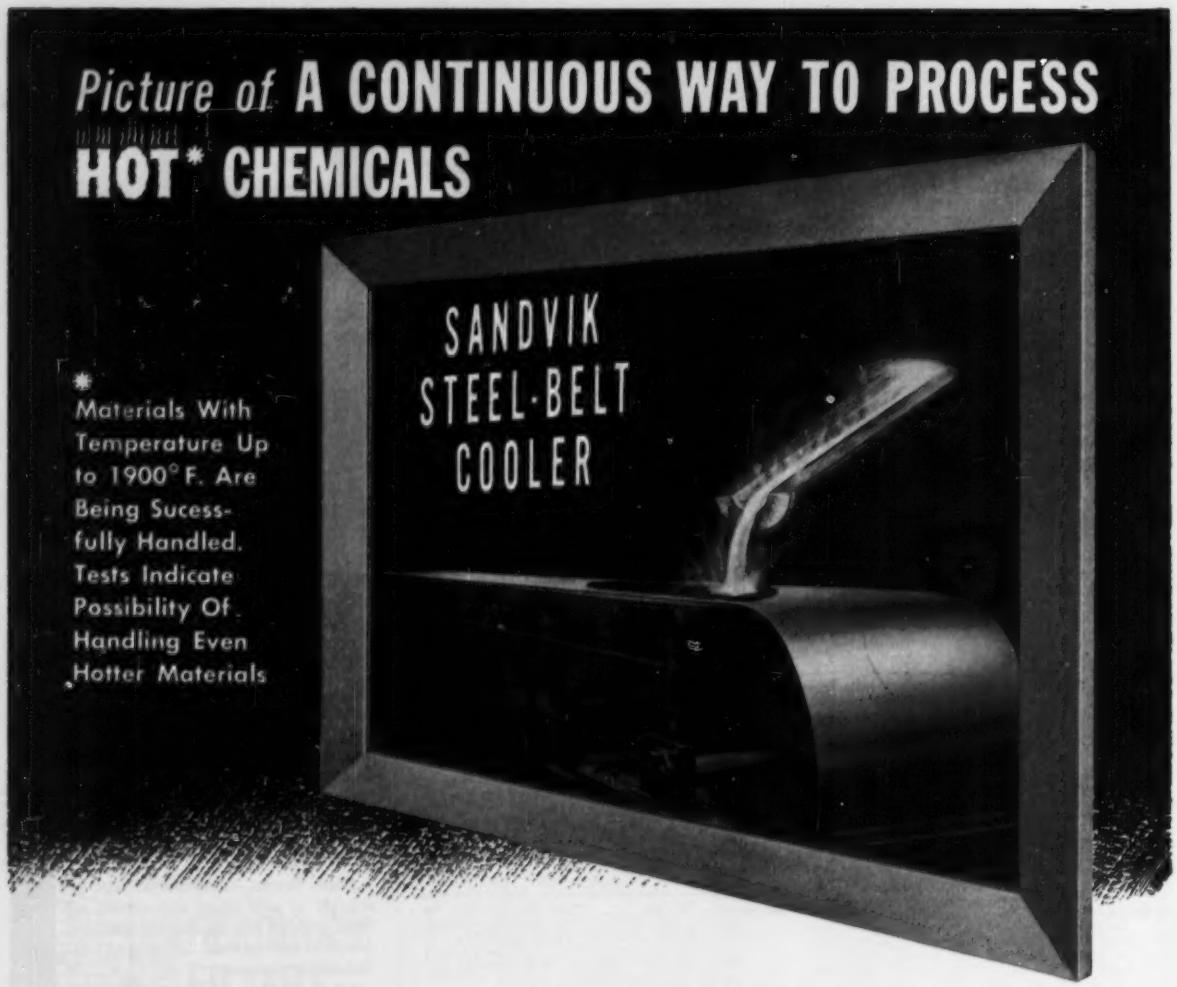
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SERVING INDUSTRY THE WORLD OVER

Picture of A CONTINUOUS WAY TO PROCESS HOT* CHEMICALS



* Materials With Temperature Up to 1900° F. Are Being Sucessfully Handled. Tests Indicate Possibility Of Handling Even Hotter Materials

Here's a way to engineer efficient, continuous-cooling or conveying into your hot material processing.

Sandvik's steel-belt continuous coolers carry the material on a solid, endless, steel band of flat, stainless or carbon steel. This band "floats" on a patented water-bed arrangement which cools from beneath . . . no water gets on top of the band.

You can cool and convey, regulate thickness and graduate temperature while cooling, obtain desired sizes in the same operation, cool and strip off gelatinous materials in sheet form, cool loose and pulverized materials, cool solids in sheet form or crystallize liquids.

A steel belt provides a smooth, hard, impervious surface that is easy to keep clean. It has a high load capacity and a long service life. It can be fitted with simple discharge devices that scrape material off at any point. It can be of any length or width.

Sandvik steel belt units *without* the patented water-bed cooling arrangement can be used for other chemical processing functions such as drying, evaporating, conveying, carrying material through ovens, etc.

ENGINEERING SERVICE—Sandvik's engineering department will be glad to work with you in designing a conveyor to fit your operation. Sandvik has had over thirty years of experience in designing units to operate either as independent units or as integral parts of special processing equipment.

Write, wire or phone for further information.

SANDVIK STEEL BELT CONVEYORS • DIVISION OF SANDVIK STEEL, INC.

1702 Nevins Road, Fair Lawn, N. J.—Tel. Fair Lawn 4-6200

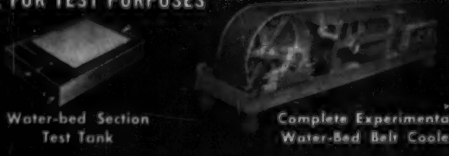
CLEVELAND • CHICAGO • LOS ANGELES

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SANDVIK STEEL BELT CONVEYORS

PILOT SCALE UNITS AVAILABLE FOR TEST PURPOSES

Experimental units are available to help you determine cooling rates and other data for your specific material.



Water-bed Section Test Tank

Complete Experimental Water-Bed Belt Cooler

Boiler, Packaged

Cuts cost of coal-fired generators. (177A)

. . . A new stationary boiler designed to reduce cost of the Navy's coal-fired steam generating equipment points to future savings for industrial users also. New standardized design covers steam capacities from 10,000 to 25,000 lbs. per hr. Completely assembled boiler is designed to release not over 35,000 Btu. per. cu. ft. of furnace volume to give best coal firing results.—*Superior Combustion Industries, Inc., New York, N. Y.*

Burner, Oven

Designed for radiant heating tubes. (177B)

. . . A special series of burners has been developed for heating radiant tubes in industrial furnaces and ovens. Outstanding feature of the RT burner is a long, slow-burning flame which gives uniform heating through a long length of tube. Gas and primary air begin combustion at the end of an alloy nozzle in secondary air stream. In this special series, air pressure at full rating is 0.5 psi.; gas pressure at full rating is even less.—*Eclipse Fuel Engineering Co., Rockford, Ill.*

Condenser, Vapor

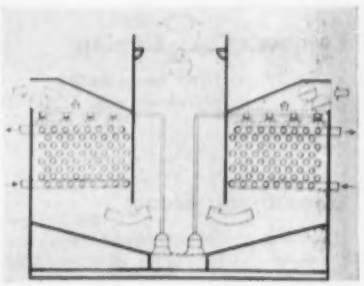
For stripping column or vacuum kettle. (177C)

. . . A vapor condenser has been developed where cooling is done by evaporating moisture on the surface of tubes through which the vapors pass. Installed on top of a stripping column or above a vacuum kettle, the apparatus provides a complete and self-contained system for condensing. —*Niagara Blower Co., New York, N. Y.*

Cooler

For process cooling. (177D)

. . . For process cooling jobs, Panel Casing Aero heat exchanger controls temperature within 2 deg., consumes less water. Exchanger cools by evaporation, modulating use of outside air to control temperature. Fluid to be cooled, either liquid, compressed air or gas, flows through two parallel-mounted coil sections. Water spraying on coils evaporates into the air streaming over them. Coil drainage is recirculated.—*Niagara Blower Co., New York, N. Y.*



Cooler, Cascade

Cools corrosives from 700 F. in open air. (177E)

. . . Corrosives can be cooled at temperatures up to 700 F. in the open atmosphere using a new standard design cascade cooler which combines Impervite resin-impregnated graphite and Graph-I-Tite carbon-impregnated graphite in its construction. Use of special extrusion method to make Graph-I-Tite inlet tubing eliminates laminations making for more uniform heat transfer and elimination of the normal tendency of graphite to spall at its high temperature limit.—*Falls Industries, Inc., Solon, Ohio.*

Cooler, Magnetic

Keeps temperature close to absolute zero. (177F)

. . . A new type refrigerating machine is said to be the first apparatus able both to produce extreme low temperatures and to maintain them for long periods of time. Based on a cyclic principle of magnetic cooling, it is believed to represent the first commercial application of the superconductivity phenomenon.—*Arthur D. Little, Inc., Cambridge, Mass.*

Cooling Tower

Engineered for long efficient life. (177G)

. . . A new induced-draft cooling tower offers a number of carefully worked out design details for long, efficient service. Two-course chevron-type mist eliminator holds drift losses well below recommended minimum values. Full-cone spray nozzles constructed of plastic disperse water completely, even 30% below design flow.—*Foster Wheeler Corp., New York, N. Y.*

Damper, Pulsating

Steadies kiln operation, saves fuel. (177H)

. . . A new pulsating damper gives kiln operators more rapid clinker cooling, better, steadier combustion, improved fuel economy, elimination of temperature differential in cooler grate, prolonged grate life. The damper is installed in air duct between cooler fan and body of cooler to create a pulsing flow of air to cooler. This levels off or evens out the flow of air from cooler to kiln. The result is reduced heat loss and fuel costs, combustion stabilized in the kiln.—*Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.*

Exchangers, Stainless

Available in standard sizes. (178A)

. . . A new line of stainless-steel heat exchangers is designed for the heating and of cooling corrosive liquids or gases. The type SSF units meet J.I.C. Standards for the Hydraulic Industry. Exchangers are designed to eliminate strains due to radical temperature difference. Smooth flow end bonnets provide the least possible impact on tubes and tube sheets at the inlet to the tube bundle.—*Young Radiator Co., Racine, Wis.*

Generator, Packaged

Uses heat from water's electrical resistance. (178B)

. . . . Based on a unique electrode principle the new Speedylectric steam generator produces steam by the simplest, most economical electrical method. Unit is in demand where high-pressure steam temperature must be controlled precisely; where there is an explosion, fire or fume hazard; or where there is a steam demand in an area located remotely from central boilers. Sizes from 1½ to 60 bhp.—*Pantex Mfg. Corp., Pawtucket, R. I.*

Fuel, Atomic

For atomic reactors. (178C)

. . . Built for the research reactor at Brookhaven, a new unclassified fuel element has three aluminum-clad fins approximately 30-in. long and held together at the ends by aluminum rings about 2½ in. in dia. Inside the aluminum cladding is a thin layer of fissionable uranium-aluminum mix.—*Sylvania Electric Products, Inc., New York 19, N. Y.*

Furnace, Coke-Burning

Uses low-volatile petroleum coke. (178D)

. . . A new development in furnace design makes possible utilization of increasing supplies of petroleum coke brought about by the fluidized coking process. Through modification of the Cyclone furnace, burning difficulties stemming from low volatility and grindability of petroleum coke have been overcome.—*Babcock & Wilcox, New York, N. Y.*

Generators, Steam

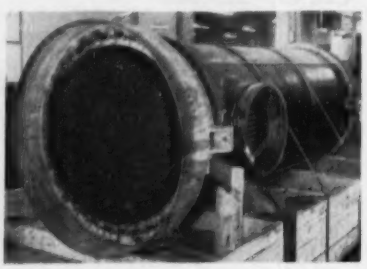
Standardized for minimum costs. (178E)

. . . Aimed at reducing steam costs for industrial plants the new SC series of standard steam generators assures industrial steam users of minimum initial and operating costs together with the advantage of short delivery schedules. Units offer a selection of maximum working pressures to 1,500 psi. without superheat and to 1,100 psi. with superheat; saturated steam temperatures to 950 F.—*Foster Wheeler Corp., New York, N. Y.*

Heat Exchanger

Large, impervious graphite unit. (178F)

. . . Large Karbate-brand impervious-graphite shell and tube heat exchanger has 685 tangentially notched weirs on its tube ends. Weirs distribute a falling film of cooling water within each of the 9-ft. long tubes of 2,000 sq. ft. unit. Operated vertically as one of a pair, exchanger cools SO_2 from the combustion of refinery sludge acid.—*National Carbon Co., Div. of Union Carbide & Carbon Corp., New York 17, N. Y.*



Heat Exchangers, Glass

Superior corrosion resistance gives top operating flexibility. (178G)

. . . A Pyrex brand shell and tube heat exchanger has been developed for processing industries where chemical resistance and product purity are primary. Light-wall tubes have a conductivity coefficient, h, of 260 Btu./hr./ft.²/deg. F. Over-all value, U, has been measured up to 195 Btu./hr./ft.²/deg. F. in water-to-water tests. Temperatures can go to 375 F. on shell side, 200F. on tube side.—*Corning Glass Works, Corning, N. Y.*

Heat Exchanger

Corrugated design for gas-to-gas service. (178H)

. . . Designed primarily for gas-to-gas service, the Plate Fin exchanger is a compact cross-flow unit with extended surface on both sides. With 150 sq. ft. of heat transfer surface per cu. ft. of exchanger, it is comparable spacewise to a tubular exchanger with tightly packed ½-in. tubes. However, it costs much less. As currently designed, cells are suitable for 100 psi. on either or both sides; gas temperature to about 1,100 F. on either or both sides.—*Griscom-Russell Co., Massillon, Ohio.*

CHROMALOX Electric Heating Equipment

for the Chemical Process Industries

Edwin L. Wiegand Company, world's largest manufacturer of Electric Heating Equipment, supplies the electrical answer to heating problems throughout industry. Over 15,000 standard items are available from stock. From this wide variety of products you can select the Chromalox Heater best suited to your application.

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APPLICATION INFORMATION



101 Ways to Apply Electric Heat **F-1550**

How to Solve Winter Problems with Electric Heat **F-1575**

Calculating Heat Requirements **B-54**

Far-Infrared Process Heating Application Reports **State problem**

PRODUCT INFORMATION



Catalog 50
General Industrial Catalog

Bulletin 701
Chromalox Circulation Heaters

Bulletin 850
Chromalox Cartridge Heaters

F-1566
Chromalox Strip Heaters

L-1125 A
Chromalox Heating Cable and Tape

L-1138
Chromalox Hi-Temp Heating Cable

Catalog D-52
Chromalox Electric Air Heaters

Bulletin CS-604
Chromalox Radiant Heaters (single element)

Bulletin SD-170
Chromalox Radiant Heaters (double element)

Bulletin CS-606
Chromalox Modular Radiant Panels

L-1104 B
Chromalox Metaray Lamp Replacement Elements

Bulletin CS-607
Chromalox Adjustable Area Far-Infrared Heaters

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Gentlemen: My heating problem is_____

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Name_____

Company_____

Address_____

City_____ Zone____ State_____

B-724

Heat Exchanger

Uses one-piece graphite bundle. (180A)

. . . The Impervite Cross-Bore heat exchanger rises highly efficient heat transfer design having cross-drilled passages in solid blocks of impervious graphite. It is good for applications involving fouling, shock, high-operating pressures, corrosion.—*Falls Industries, Inc., Solon, Ohio.*

Heat Exchanger

Improved thermal conductivity. (180B)

. . . Improved thermal conductivity featured by the new Polybloc corrosion-resistant graphite heat exchanger stems from orientation of the graphite crystals combined with highly turbulent flow. Formation of film and scale minimized by turbulent flow. Proper orientation of graphite crystals insures maximum heat conductivity.—*Carbone Corp., Boonton, N. J.*

Heat Exchangers

Standard units from stocks. (180C)

. . . Standard heat exchangers in sizes from 20 to 400 sq. ft. now are available from Struthers Wells. Cost is low because design and component have been standardized. Standard units include fixed tube sheet, floating head and U-tube units.—*Struthers Wells Corp., Warren, Pa.*

Heater, Corrosives

Has glass tubes in steel shell. (180D)

. . . A new 50 sq. ft. Pyrex brand shell and tube heater has been developed to heat corrosive liquids. Terminating 18 unit months of field testing, manufacturer reports exchanger is extremely economical to operate and to maintain. It can heat any corrosive acid, except hydrofluoric, as well as corrosive coke byproduct oils and liquids for pickling and for electroplating steel.—*Corning Glass Works, Corning, N. Y.*

Heaters

Rated for 50% more pressure. (180E)

. . . Pressure rating for two styles of header-type, double embossed Plate-Coil heaters has been raised from 100 to 150 psi. The increase results from improved engineering, factory control and fabrication. A safety factor of 1 to 4 has been retained between maximum operating pressure and rupture pressure.—*Tranter Mfg., Inc., Lansing, Mich.*

Heater, Hot Oil

Electrically heated, fully automatic. (180F)

. . . New electrically heated, fully automatic Merrill Process Systems produce any oil temperature at low pressure within the range of 150 to 600 F. Completely assembled packaged unit is ready for immediate service when connected to tanks or kettles to be heated and to suitable electrical supply. Systems can be supplied in capacities from 50,000 Btu. per hr. limited only by electrical supply.—*Parks-Cramer Co., Fitchburg, Mass.*

Joints, Rotary

Seals at low pressure up to 550 F. (180G)

. . . A standard low-pressure joint has been adapted to satisfy high temperature needs by redesigning the piston and piston seal. A balanced-piston design gives line contact at the rotating seal surfaces to assure long life. A formed shape of Rulon patented low-friction bearing material is fitted to the new piston and maintained under pressure by the sealing spring and line pressure.—*Anco Div., American Associates, Inc., Providence 5, R. I.*

Siding, Plastic

For cooling tower. (180H)

. . . A cooling tower installed recently at the South Texas Cotton Oil Co., Houston, has siding fabricated of corrugated asbestos-plastic composition. Some obvious advantages are light weight and imperviousness to rot and mold. Since the siding is translucent, light penetrating the tower eases cleaning and repairing.—*The Fluor Corp., Los Angeles, Calif.*

Transfer Surface

Inner and outer fins boost transfer rate. (180I)

. . . Use of the new Inner-Fin surface is said to permit construction of smaller, lighter heat transfer units. Any type of heat exchange, be it air-to-air, liquid-to-air or liquid-to-liquid, done more efficiently with new heat exchange elements.—*Brush Mfg. Co., West Hartford, Conn.*

Tube, Finned

High conductivity without oxidation at 1,700 F. tip temperature. (180J)

. . . Heat produced during catalytic reaction or regeneration of the catalyst now can be recovered efficiently from the high temperature gas. A new finned tube construction, known as the high temperature K-Fin, permits more compact furnaces to be built at a lower cost than was possible previously. The fin, sealed to the tube by a special brazing alloy, has a copper interior that conducts heat rapidly and an austenitic stainless cladding that resists oxidation.—*The Griscom-Russell Co., Massillon, Ohio.*

Are Process Methods "dragging their feet" in the Chemical Industry?

But Are Process Methods Keeping the Pace?



Heating of solutions, for example, is accomplished by methods which are basically related to the teakettle whistling away on a kitchen stove. With such methods fuel bills are inordinately costly, original equipment and installations are expensive, corrosion imposes a heavy maintenance toll.



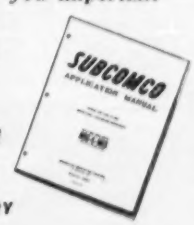
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A Subcomco® NOZ-L-MIX® burner like this one delivers 5,000,000 B.T.U's per hour.

One Subcomco® burner installed in what is little more than a bulge in the piping can do the job that would ordinarily require an expensive tank, a complete boiler installation, perhaps even an entire building to house the equipment. One $6,000.00 Subcomco® burner, used as a chemical reactor and arranged in the manner shown at right, is used by a caustic chlorine producer at a saving of $1,200 per month.

And this is only *one* application of Submerged Combustion equipment. There are many more. We'd like to hear from you. If you have a process where a liquid is to be subjected to heat, carbonation or a chemical reaction, let us hear from you. We'll be perfectly frank. If we can't offer you important advantages, we'll say so. If we can, we'll work with you to develop an improved process for your company.



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Submerged Combustion COMPANY OF AMERICA, INC.

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Heaters & Coolers

Vaporizer, Packaged

For controlled temperature with Dowtherm. **(182A)**

. . . Using Dowtherm A or E, p-cymene or anisole, Type MH packaged vaporizer produces high temperatures at low pressure. Control is simple, sensitive and uniform. Units are built to meet requirements ranging from 3.7 to 15 million Btu. per hr.—*Union Iron Works, Erie, Pa.*

Vaporizer-Mixer

For LP gas. **(182B)**

. . . Self-contained, automatic, packaged LP gas vaporizers, vaporizer-mixers and mixers have been developed for industry, utilities. No outside power is needed to deliver gas at 1-5 psi. Where higher pressure mixed fuel or low pressure liquid is needed power may be needed to drive auxiliary pumps. Vaporizer-mixers have capacities of 1,000 to 50,000 cu. ft. hr. Vaporizer sizes range from 40 to 800 gal. per hr.; mixers from 100 to 5,000 cu. ft. per hr.—*American Liquid Gas Corp., Los Angeles, Calif.*

TECHNICAL LITERATURE

HEATERS & COOLERS

Aftercoolers & Separators.....Booklet prepared to help firms lower hidden costs of compressed air use. Includes suggestions, a check list of aftercooler effectiveness, size & capacity charts. Bulletin 711.
182C R. P. Adams Co.

Air Conditioning.....Exact control of moisture content . . . to improve your product or protect your materials or for processes or tests. For complete information, request Bulletins 112 & 122.
195a *Niagara Blower Co.

Air Handling & Conditioning Equipment.....72 p. "Clarage Air Handling and Conditioning Equipment Service Manual" furnishes valuable material adaptable to virtually any air handling or conditioning job.
182D Clarage Fan Co.

Baths, High Temperature.....Leaflet describes the Hy-Temp Aging Bath. Covers uses—including ASTM rubber aging test methods—and the numerous features. Request your copy of illustrated Bulletin No. 668.
182E Precision Scientific Co.

Boilers, Integral-Furnace.....Boilers of every type & rating, & covering an unusual range of steam requirements, are service-proved—combine lower steam costs with higher service life. Offers illustrated Bulletins.
193 *Babcock & Wilcox Co.

Boilers, Packaged.....Describes the new forced-draft "CB"—with the fan mounted inside the front hinged door." Latest Boiler Bulletin covers your size requirements—contains specification data to help you plan.
182F Cleaver-Brooks Co.

Boilers, Packaged.....Bros packaged boilers fulfill all steam requirements in the medium pressure range. Offer high steam generating efficiencies with economy of installation & low maintenance costs. Form WT-7.
182G Wm. Bros. Boiler & Mfg. Co.

Boilers, Packaged Automatic.....Offer valuable features: low-cost, space saving installation; fast steaming; instant response to load changes; quick fuel change-overs; clean, dry steam; etc. Data in Bulletin 1220.
182H Orr & Sembower.

Boilers, Waste Heat.....FW Waste Heat Boilers utilize hot exhaust gases from kilns, Diesels or other engines, converting otherwise wasted energy into usable steam. For details, request Bulletin WHB-47-4.
31f *Foster Wheeler Corp.

Burners.....Announces a new line of U.L. approved power pressure burners. Available in straight oil, straight gas, & combination gas-oil, burners incorporate latest developments. Details in Bulletin No. 655.
182I Ray Oil Burner Co.

Burners.....With "Surface" Automatic Proportioning, the precise amount of air required for complete combustion is constantly mixed with the gas. For complete information, request Bulletin No. H55-5.
182J Surface Combustion Corp.

Burners.....Surface burners give you peak combustion efficiency. You can easily adjust a Surface inspirator to give correct gas-air ratios uniformly over the entire operating range. Bulletin SC-156.
182K Surface Combustion Corp.

Burners.....New series of Rotary oil burners all have integral air registers. They range in size from 9 g.p.h. to 125 g.p.h. and are exceptionally easy to install. Request spec. sheets & tech. data.
182L Iron Fireman Mfg. Co.

Burners, High Velocity.....Completely separate from the liquid being heated & maintenance, control & accessibility are greatly simplified. High heat release rate in these submerged combustion units. Bul. 110.
182M Thermal Research & Engrg.

Burners, Incinerator.....Company's recently developed small packaged burner provides an effective method for complete incineration of waste materials. Full specifications described in Bulletin No. H-51.
182N Eclipse Fuel Engrg. Corp.

Burners, Ribbon.....Selas ribbon burners are specially designed gas-fired heating units which produce a narrow, uniform sheet or "ribbon" of flame. Employed in continuous heat processing application. Bul. SC-1004.
182O Selas Corp. of America.

Cables, Heating.....Bulletin contains product, application, and installation information and the collateral data to help in the selection and installation of heating cable for any specific job. Publication No. 19-675.
182P General Elec. Co.

Coils, Heating & Cooling.....Aerofin Smooth-Fin coils offer you greater heat-transfer per sq. ft. of face area . . . lower airway resistance—less power per c.f.m. Complete details in Bulletin No. S-55.
182Q Aerofin Corp.

Coils, Heating & Cooling.....Stainless—Continuous plate type with staggered tubes and smooth drawn ferrules pressure-expanded to produce effective positive mechanical and thermal bond between tube & fin. Details.
182R Mario Coil Co.

Coils, Heating & Cooling, Test Procedures.....Releases valuable HCCMA reference, "Standard Methods of Testing and Rating Forced-Circulating Air-Cooling and Air-Heating Coils." Request Bulletin No. 202.
182S Heating & Cooling Coil Mfrs'.

Coils, Water.....Aerofin Type "R" Removable-Header Water Coils offer valuable features: complete drainability; easily cleaned; high heat transfer. For complete information, request Bulletin No. R-50.
182T Aerofin Corp.

Combustion Equipment.....Eclipse "Process Designed" combustion equipment fires immersion heating tanks for finishing aluminum. Request Catalog describing Eclipse's line of combustion components.
182U Eclipse Fuel Engrg. Co.

Condensate Control.....Cochrane C-B System of condensate control improves heat transfer equipment . . . returns condensate to boilers at high temperature and pressure. Complete data contained in Publication 6025.
182V Cochrane Corp.

Condensers, Barometric.....Provide an economical means of condensing steam and producing vacuum. Generously illustrated booklet describes two types—Disc-Flow and Ejector-Jet. Request copy of Form No. 9012-A.
182W Ingersoll-Rand Co.

Condensers, Barometric.....For removing air, exhaust steam & other vapors from vacuum equipment. Includes: condenser theory; basic condenser types; features; application & construction data; etc. Bulletin 5AA.
182X Schutte & Koerting Co.

Condensers, Evaporative.....Stainless—3—150 tons. Suitable for indoor or outdoor location. Quiet operating. All prime surface condensing coil. Available to your specifications. Request further information.
182Y Mario Coil Co.

Condensers, Refrigerant.....Evaporative refrigerant condensers provide protection against scaling of tubes, controlling of compressor head pressures, saving condenser water. Bulletins 111, 123, & 131.
195f *Niagara Blower Co.

Condensers, Surface.....Ross surface condensers serve power plants everywhere. Qualified engineers can help you in the solution of condensing and heat exchange problems. Request your copy of Bulletin 8.2K1.
182Z Ross Heat Exchanger.

*From advertisement, this issue.

1956 INVENTORY

Coolers.....Sandvik Steel-Belt Cooler continuously carries material on a solid, endless steel band of flat, stainless or carbon steel. Cools materials with temperature up to 1900 F. Request further information.
176 *Sandvik Steel.

Coolers.....Fuller coolers are handling materials such as pebble lime, dolomite, iron nodules & Portland cement with efficiency. For details, request your copy of Bulletin No. CO-5.
183A Fuller Co.

Coolers.....Joy air and gas aftercoolers cool and remove water vapor and oil from compressed air. 125 to 7500 cfm capacity. For information concerning features, specifications, etc., request Bulletin A-27C.
337k *Joy Mfg. Co.

Coolers, After.....Illustrated, 8 p. explains the functions of the Niagara Aero After Cooler in removing moisture from compressed air and gas. Details the outstanding features and advantages. Bulletin No. 130.
195d Niagara Blower Co.

Coolers, Cascade.....Describes & illustrates new impervious graphite cascade cooler which provides economical high temperature processing. Includes typical properties of "Graph-I-Tite." Bulletin No. GS 101.
183B Graphic Specialties Corp.

Coolers, Cascade.....Corrosion-resistance prevents chemical attack inside tubes and permits the use of river or sea water as coolant. Includes heat transfer nonographs, tables, etc. in Catalog No. PE-8.
183C Corning Glass Wks.

Coolers, Cascade.....Designed for cooling corrosive liquids and gases. Low initial cost and maintenance, radiused returns for low pressure drop as well as redwood waterguide strips. Catalog Section No. S-6820.
183D National Carbon Co.

Coolers, Fluid.....Describes Trane Dry Type Fluid Coolers, units developed specially for economical liquid or gas cooling. Covers construction, performance, maintenance, component parts, etc. Bulletin S-395.
183E Trane Co.

Coolers, Liquid.....Describes cooling for chilled water or solutions, with elimination of freeze-up danger, with rapid chilling of large volume and close temperature control. Bulletin No. 104.
195g *Niagara Blower Co.

Coolers, Sample Fluid.....For sampling high temperature process fluids—reduce sample process fluid temperatures from 60°F to 100°F at pressures up to 1500 psi. Details in fully illustrated Catalog.
183F Young Radiator Co.

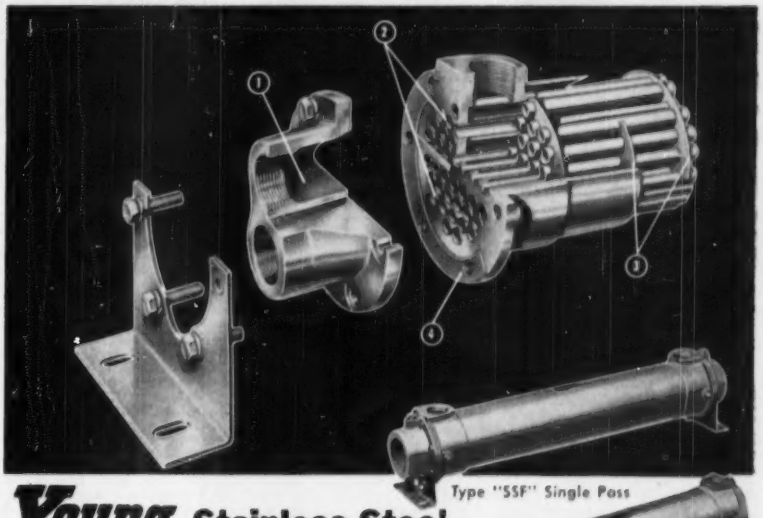
Coolers, Rotary Air.....Company furnishes complete information on the Davenport rotary air cooler (6' 0" dia. 80' 0" long). Cooler is of aluminum construction to cool molten alum. Request Catalog "A."
183G Davenport Mach. & Foundry.

Dampers, Pulsating.....Company announces the development of a pulsating damper which provides better fuel-economy and steadier kiln operation for its Air-Quenching cooler. Request literature, No. SN-23.
183H Allis-Chalmers Mfg. Co.

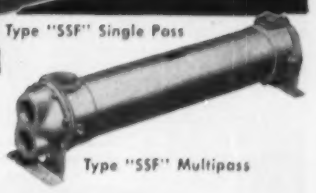
Dehumidification.....“Facts About Dehumidification for Industrial Plants, Warehouses, Stockrooms and Laboratories and Home Requirements” answers your questions and shows the latest equipment in this line.
183I Abbeon Supply Co.

Dehumidification Equipment.....Presents a new illustrated bulletin showing refrigeration as well as adsorption type dehumidification equipment for dehumidification of compressed air & gases. Bulletin No. R-11.
183J Desomatic Products.

Young Engineering Talent
Solves Corrosion Problems



Type "SSF" Single Pass



Type "SSF" Multipass

Young Stainless Steel heat exchangers provide more cooling surface per unit volume

The problem: Meet the Chemical Industry's need for corrosion-resistant heat exchangers.

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After months of testing, Young Radiator Company utilized a special type of stainless steel for fabricating heat exchangers. They are for use in the processing of highly corrosive chemical liquids and gases. The newer Young Exchangers are engineered to withstand expansion strains and have reserve capacity. They include factors for fouling, and simplified construction makes cleaning easy.

1 Smooth flow bonnet distributes fluid with minimum turbulence to tubes.

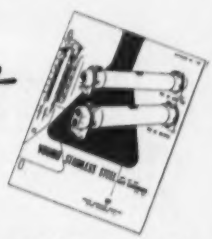
2 Tubes are rolled into headers.

3 Baffles made to close tolerance.

4 Gasket eliminates by-passing, fluid leakage.

Put Young Talent to work for you . . .

Solving heat transfer problems is what we do best because it is our very reason for being. You, too, can harness the power of Young engineering talent. Write, wire or call without obligation.



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Creative HEAT TRANSFER ENGINEERS FOR INDUSTRY
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TECHNICAL LITERATURE

Dryer-Coolers, Rotary—

Heat Exchangers

Dryer-Coolers, Rotary.....This versatile equipment is particularly applicable in drying or cooling heavy or high moisture content materials. Dries with parallel flow and cools with counterflow. Request data.
184A Allis-Chalmers Mfg. Co.

Drying Installations.....Illustrates air conditioning cabinet & drying installations including siccative coatings, paper, plastics, confectionery, pharmaceuticals metallurgical uses. Bulletins 112 & 88.
195b *Niagara Blower Co.

Exchangers, Film Type.....Vogt film type exchangers are operating with real economy of first cost, operation & maintenance in power, petroleum, & chemical industries. Typical installations in Bulletin No. HE-7.
184B Henry Vogt Mach. Co.

Freeze Drying Equipment.....Designed for reliability & operator convenience, the complete Freeze-Dry line includes laboratory pilot plant & production-sized models. Request Brochure FD3.
352i *National Research Corp.

Freezing & Cooling.....Describes "No-Frost" method; production of extreme low temperature for industrial uses or food freezing, pre-cooling & storage. Request Bulletins No. 95 & 105.
195e *Niagara Blower Co.

Bulletin 355



This 52-page BOOK

proves that old-style pipe-coils are too costly, too large, too heavy, too slow, too inconvenient, and too inefficient. It makes clear why the



DEAN THERMO-PANEL COIL

is now being specified by discriminating chemists and engineers, for instance, the OUTSIDE HEATED drum at the right. The book gives examples of heating and cooling by steam, water, etc.

ASK FOR Bulletin 355. If you want to do your own designing and estimating ask for Bulletin 356. Also, Dean engineers will gladly help.



Backed by 20 years of Panel Coil Manufacturing.

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Furnaces.....Makes available a new technical bulletin describing furnaces for the heating and heat treatment of aluminum and other light metal alloys from the ingot to the finished products. Bulletin No. SC-171.
184C Surface Combustion Corp.

Furnaces.....The Blaw-Knox Radiant Furnace is a newly designed unit for rapid precision heating of heat-sensitive materials. It is designed for gas or oil firing. Request Reference Files 2-2.1 & 2-2.2.
184D Blaw-Knox Co.

Furnaces.....The Water-wall furnace brings these advantages to existing boilers: improved circulating characteristics; improved life expectancy; 50% increased boiler capacity; 10% improved efficiency. Request details.
184E Preferred Utilities Mfg. Corp.

Furnaces, Industrial.....New catalog describes standard and special furnaces to 3000°F in several series, ovens & furnaces with silicon-carbide heating elements. See "Industrial Furnaces & Ovens."
184F L & L Mfg. Co.

Furnaces, Multiple Hearth.....Thousands of Nichols Herreshoff & Bethlehem Wedge furnaces, custom built or standard design, all individually engineered, are now in worldwide operation. Complete literature.
184G Nichols Engrg. & Research.

Furnaces, Vacuum.....Efficient, dependable & easy operation are features of NRC high vacuum Arc, Induction & Resistance Furnaces. Capacities from 2 to 2000 lbs. Request Brochure F2.
352g *National Research Corp.

Generating Equipment, Steam.....Company specializes in design & manufacture of steam generating equipment. Line of watertube boilers gives top performance because of balanced design features. Form No. WT-4.
184H Wm. Bros. Boiler Mfg. Co.

Generators & Dryers.....Pipe line purging problems solved by Kemp gas generator & dryer. As a unit they insure a constant supply of gas, dry & free the gas sufficiently of oil vapors. Request information.
184I C. M. Kemp Mfg. Co.

Generators, Steam.....The Vogt Class VV steam generator is a reliable, safe & completely portable shop-assembled water tube boiler of extremely simple & compact design. Details in illustrated Bulletin PSG-2.
184J Henry Vogt Mach. Co.

Generators, Steam.....Vogt steam generators are available in bent tube types and straight tube forged sectional header types for solid, liquid or gaseous fuels. Request descriptive product Bulletins.
184K Henry Vogt Mach. Co.

Generators, Steam.....12 p. describes formulas behind all package steam generators, & shows how installation of generator can raise steam capacity in an existing boiler room without extensive structural changes.
184L U. S. Radiator Corp.

Generators, Steam.....Company releases its latest catalog describing its products and services, which include not only the well-known Wickes steam generators but also custom metal fabrication. Bulletin 55-1.
184M Wickes Boiler Co.

Generators, Steam.....Water, force-circulated through a Modulatic steam generator, absorbs heat more thoroughly. Vapor's water-tube design provides unique spaced heat-transfer surfaces. Bulletin 586.
184N Vapor Heating Corp.

Generators, Steam.....Describes the pre-engineered, standardized steam generators offered in 9 sizes, with capacities of from 50,000 to 150,000 lb. per hr. Includes drawings & design features. Bulletin B-55-4.
31d Foster Wheeler Corp.

Generators, Steam.....16 p. book gives capacities, dimensions, construction features, instrumentation, accessories, sectional drawings & installation photos on new series of steam generators. Bulletin PG-55-3.
184O Foster Wheeler Corp.

Generators, Steam.....Illustrated, 14 p. describes Titusville Type WTP shop-assembled Water Tube Steam Generators. Includes technical data, a dimensional drawing with table of dimensions, etc. Bulletin 5511.
184P Struthers Wells Corp.

Generators, Steam.....Compact marine steam generator delivers 5000 lb. steam/hr. in ½ space. Boiler is designed to modulate over a wide range with high efficiency. Request complete information.
184Q Cyclotherm.

Heat, Dielectric.....Illustrated, 12 p. literature reference features sections on: Dielectric Heat—What Is It?; Is Dielectric Heat Efficient?; Uses of Dielectric Heat (in plastics, rubber, woodworking, etc.).
184R Resdel Engrg. Corp.

Heat Exchange Equipment.....Of special interest to the chemical, oil processing & other basic industries is a new reference on heat exchange equipment—Drayer-Hanson Cal-Fin Tubing. Bulletin No. 3008.
184S Drayer-Hanson.

Heat Exchange Equipment.....Frick's engineering staff is well equipped to meet your heat transfer, refrigeration and air conditioning problems. For more complete information on their line, request details.
184T Frick Co.

Heat Exchangers.....Brown Fintube's design eliminates baffles, minimizing pressure drop. Booklet lists dimensions & capacities of standard sizes. Other sizes & designs to meet any requirement. Bulletin 521.
184U Brown Fintube Co.

Heat Exchangers.....Fully illustrated bulletin provides the complete facts on "Holo-Flite" Processor savings and how this field-proven unit can save space, time, and money on your processing operation. 8 p.
184V Western Precipitation Corp.

Heat Exchangers.....Open in 5 seconds with new p-k Lever-Lock Door. Savings seen for processors of high-fouling liquids & others who must clean & inspect heat exchangers regularly. Details in Bulletin No. 2030.
184W Patterson-Kelley Co.

Heat Exchangers.....Describes Polybloc graphite heat exchanger . . . with unique design features that eliminate cemented joints & product continuous turbulence. Includes characteristics, operation, etc. Bulletin 6550.
184X Carbone Corp.

Heat Exchangers.....For corrosive or non-corrosive liquids and gases. Industrial builds these to suit the job and can furnish all auxiliary pumps, piping and fittings. Request Bulletin No. 600-26-354.
167e Industrial Filter & Pump.

Heat Exchangers.....Whitlock has developed a complete transfer oil heating system in one compact "package." It effectively serves to reduce overall equipment & simplify process design. Literature & prices available.
184Y Whitlock Mfg. Co.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

*From advertisement, this issue.

TURBA-FILM process unit

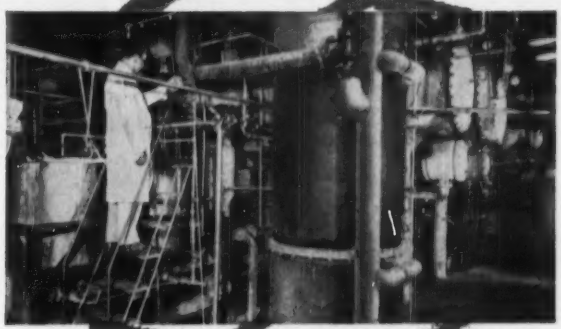
Reduces original equipment investment
Cuts steam and operating costs
Produces higher concentrate

Swift & Company specified the Turba-Film® process unit for concentrating gelatin liquor at their Kearney, New Jersey plant.

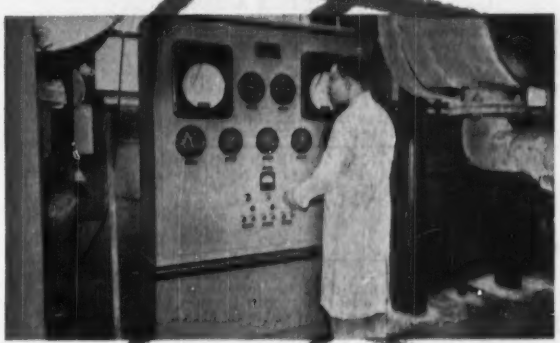
In this single-pass continuous operation the thin film of gelatin liquor spirals downward under continuous, turbulent agitation by the rotor blades. Heat transfer rate is extremely high since each particle of material is in contact with the heated surface for only a few seconds. There is no "cooking" or loss of flavor because there is no localized overheating; basic properties of the product are retained in the concentrate.

Gelatin poses many problems in processing because of its low heat transfer, tendency to foam, variations from initial to final viscosity, and heat sensitivity. The Turba-Film process unit is successfully solving these and many other problems throughout the chemical and allied process industries.

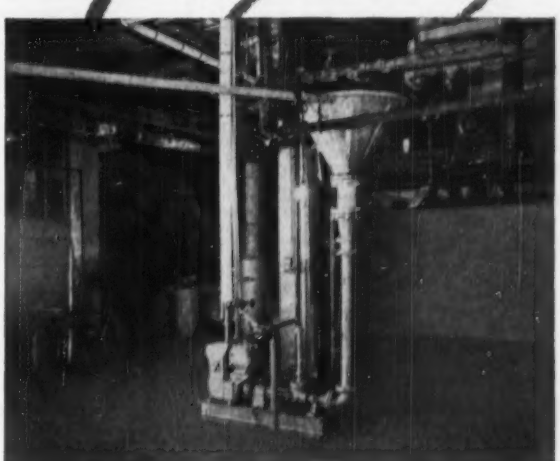
Without obligation, Rodney Hunt would like to discuss how the Turba-Film process unit can help you in normal or specialized applications, either as an individual unit or as part of completely engineered "package systems". Write for literature.



Gelatin liquor [illegible] steel tanks into the [illegible]ba-Film process unit at Swift & Co. This [illegible]



Instruments shown here control heat of gelatin liquor. Feed rate and heat are closely controlled during this continuous single-pass operation.



After leaving Turba-Film unit, gelatin concentrate is pumped to a receiving tank, from which it goes to [illegible] dryer.

RODNEY HUNT®

RODNEY HUNT MACHINE CO.

Process Equipment Division

31 Vale Street, Orange, Massachusetts, U. S. A.

Heaters & Coolers

TECHNICAL LITERATURE

Heat Exchangers—

Heaters, Electric Screen

Heat Exchangers.....New 8 pg. bulletin describes "Superplate" sanitary heat exchangers, for continuous heating, cooling, regeneration & shortime pasturization of liquids & semiliquids. Request bulletin G-515.
305b *Cherry-Burrell Corp.

Heat Exchangers.....Designers & builders of bends, coils, condensers, coolers, heat exchangers, heaters, piping, reboilers, etc., offer reference to help select your heat transfer equipment. Bulletin No. 250.
186A Whitlock Mfg. Co.

Heat Exchangers.....Describes Type "SSF" stainless steel heat exchangers for heating or cooling liquids & gases as used in industries where elements of corrosion to alloys are encountered. Catalog No. 1155.
188 Young Radiator Co.

Heat Exchangers.....Catalog describes Camac Heat Exchangers for all plating, pickling and anodizing solutions. Lists all solutions used and proper materials of construction to give satisfactory performance.
186B Carl Buck & Assoc.

Heat Exchangers.....Ross exchangers are pre-engineered, fully standardized & easy to install & maintain. Available in a wide range of designs & sizes. For detailed information, request Bulletins 1.1K5 & 2.1K5.
Ross Heat Exchanger Div.
186C Ross Heat Exchanger Div.

Heat Exchangers.....The Rietz Thermascrew is basically a true heat exchanger consisting of a hollow screw mounted on a hollow shaft, rotating at slow speeds in a jacketed trough or pipe. Details in Bulletin No. T-506.
186D Rietz Mfg. Co.

Heat Exchangers.....FW can supply standard, normal-duty heat exchangers and heat absorbers of all types. Also corrosive-resistant units of high-conductivity "Karbate." See Bulletin OH-49-1 for details.
31e *Foster Wheeler Corp.

Heat Exchangers.....Exchangers for refineries, petrochemical plants & for chemical plants are available at Western. Request a copy of the company's new booklet, "Brand of Progress" for details.
186E Western Supply Co.

Heat Exchangers.....In De Laval plate heat exchangers the plates are so designed as to produce strong turbulence and high velocity . . . achieving maximum heat transfer. Plate Heat Exchanger Bulletin PHX.
186F De Laval Separator Co.

Heat Exchangers.....Description of Chromalox electric circulation heaters and methods of applying for controlled heating of water, oils, heat transfer media, steam and air and other gases. Product Bulletin 701.
186G Edwin L. Wiegand Co.

Heat Exchangers.....The improved design heat exchanger, Type "BD", has proved efficient under stringent conditions in the petroleum, power, chemical processing, and other industries. Bulletin Supplement 12-H8.
186H Schutte & Koerting Co.

Heat Exchangers.....Describes evaporative cooling apparatus that keeps control of temperature within 2 degrees by modulating flow of air. Saves 95% of cooling water. Request Bulletin Nos. 120, 124 & 132.
195i *Niagara Blower Co.

Heat Exchangers.....Illustrated, 16 p. provides data on use of aluminum in heat exchangers. Includes: advantages; application information; design data; fabrication considerations; engineering service.
186I Reynolds Metals Co.

Heat Exchangers.....New, illustrated 12 p. Catalog describes impervite "Cross-Bore" and "Cubical" corrosion-proof heat exchangers, includes features, scale drawings, dimensions for all models, etc. Bulletin No. 537.
186J Falls Industries.

Heat Exchangers.....Illustrated, 16 p. Design Manual provides basic information on the characteristics, design, and operation of the Pyrex modular shell and tube heat exchanger units. Bulletin No. PE-33.
186K Corning Glass Wks.

Heat Exchangers.....B&G Exchangers feature: efficient design, special features, precision workmanship, & correct selection & handling of materials. Request B&G catalog showing application range.
186L Bell & Gossett Co.

Heat Exchangers.....Two new bulletins describe the distinctive features, applications & design details of the G-R twin G-Fin Section & the G-R fin-fan Exchanger. Request Bulletin Nos. 1401 & 2400.
186M Griscom-Russell Co.

Heat Exchangers.....New bulletin contains data & illustrations of interest to designers & users of custom-built heat transfer equipment. Describes a number of available heat exchanger types. Request Bulletin HE.
186N Downingtown Iron Works.

Heat Exchangers.....New Alcotwin heat exchangers give "building block" flexibility, unequalled heat transfer. They provide economical, high performance in package form. For complete details, request brochure.
186O Alco Products.

Heat Exchangers.....Describes how equipment offers: chemical resistance to practically all corrosive fluids; resistance to severe thermal shock; high heat-transfer rates; low maintenance; etc. Catalog S-6740.
186P National Carbon Co.

Heat Exchangers.....Covers complete line of Karbate brand impervious graphite shell & tube heat exchangers. Engineered for maximum corrosion resistance & minimum maintenance. Catalog Section No. S-6800.
186Q National Carbon Co.

Heat Exchangers.....New 16 p. brochure includes: a description of the design specifications & construction details of these standard units; tables of overall dimensions; thermal design data. Request Bulletin No. M-306.
186R Lummus Co.

Heat Exchangers, Impervious Graphite.....Accommodates operating pressures in 150-200 psi range; simple design results in good resistance to physical shock; easy shell side cleaning. Details in Bulletin No. 537.
186S Falls Industries.

Heat Exchangers, Plate.....High thermal efficiency, high pressure resistance, precision tightening, simple cleaning. To get all the facts, request the "DeLaval Heat Exchanger Bulletin" today.
186T De Laval Separator Co.

Heat Transfer Apparatus.....Highlights representative products in company's line of heat transfer equipment. Includes: oil heaters & coolers, strainers, evaporators, heat exchangers, etc. Condensed Bulletin HT-1.
186U Schutte & Koerting Co.

Heat Transfer Apparatus.....Versatile & efficient dryer-cooler does four big jobs—crystallizes . . . dries . . . anneals . . . cools. Describes Allis-Chalmers heat transfer equipment in Bulletin No. 07B6368.
186V Allis-Chalmers Mfg. Co.

Heat Transfer Apparatus.....You can recover heat from gases at extreme temperatures. Bulletin covers design, construction & applications of G-R High-Temperature K-Fin Heat Transfer Surface. Bulletin 1400.
186W Griscom-Russell Co.

Heat Transfer Apparatus.....Illustrated. 24 p. catalog describes National Sections of various types that are used to build cooling and condensing systems for process fluids. Details features, uses, etc. Catalog No. HT-23.
186X National-U. S. Radiator Corp.

Heat Transfer Apparatus.....Illustrated booklet provides valuable data on Young heating and cooling coils, air conditioning units, baseboard convectors, unit heaters, convectors, etc. Request your copy of Catalog 256.
186Y Young Radiator Co.

Heat Transfer Apparatus.....Votator heat transfer apparatus can improve efficiency and product quality in numerous processes. Company makes available a Heat Transfer Data Book containing complete information.
186Z Girdler Co.

Heat Transfer Equipment.....Provides heat transfer equipment for the most exacting services in petroleum refineries, chemical plants, and related industries. Bulletin describes the wide range of equipment.
186AA Henry Vogt Mach. Co.

Heat Transfer Equipment.....Announces the availability of a new reference which provides dimensions, data and capacities for easy selection of the more commonly used types of heat transfer equipment. 12 p. Bulletin 21.
186BB Buxton Mfg. Co.

Heat Transfer Surfaces.....Brochure contains engineering data and application information on Inner-Fin surface . . . applicable wherever any type of heat exchange is required. Illustrated Bulletin No. 850.
186CC Bush Mfg. Co.

Heat Transfer Systems.....Capacities can range from small portable units to large gas- or oil-fired units generating from 250,000 to over 10,000,000 B.T.U.'s per hour. Request names of designers & manufacturers.
186DD Monsanto Chem. Co.

Heaters, Air, Direct Fired.....Readily adaptable to wide variety of uses in ovens, kilns, dryers, etc. Includes information on applications, operation and typical sizes, in fully illustrated Bulletin No. 104.
186EE Thermal Research & Engrg.

Heaters, Deaerating.....Describes the design, operation & application of heater. Photos & cross-sectional diagrams illustrate construction & versatile manner in which it can be installed. Bulletin No. WC-118.
186FF Graver Water Conditioning.

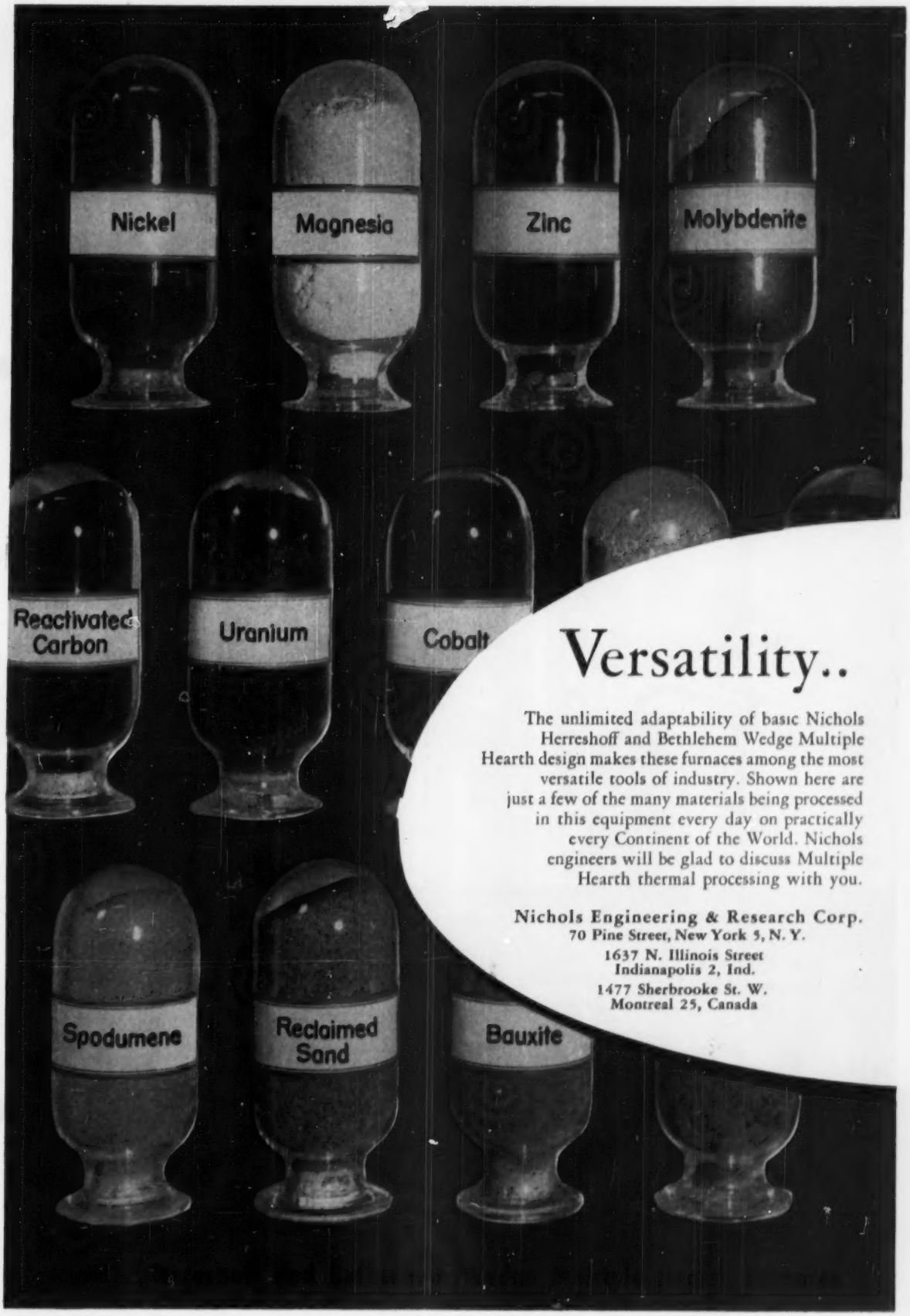
Heaters, Distilled Water.....Furnishes complete information on distilled water heater which heats distilled water automatically. Covers construction details and electrical requirements. Bulletin No. 132.
186GG Barnstead Still & Sterilizer.

Heaters, Electric.....Check Chromalox electric heat for your application. See F1550—"101 Ways to Apply Electric Heat." To get details about heaters for electroplating industry, request Bulletin No. 750.
186HH Edwin L. Wiegand Co.

Heaters, Electric Screen.....Reduce costs....Increase production with Hanco heaters. Describes advantages: faster screening — faster screen changes; 5-way cost reduction; fast, easy installation; etc. Bulletin 521.
186II F. R. Mannon & Sons.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

*From advertisement, this issue.

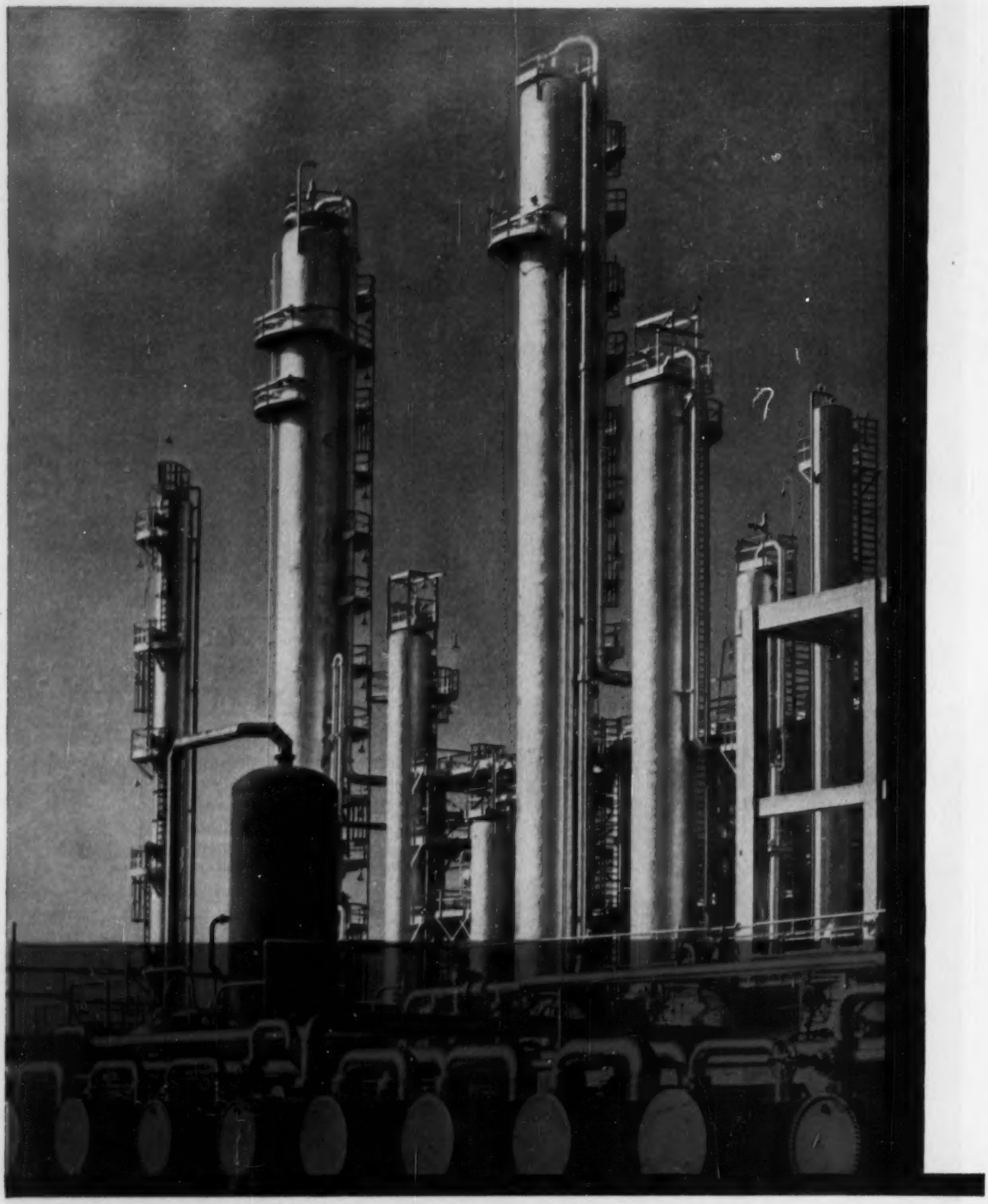


Versatility..

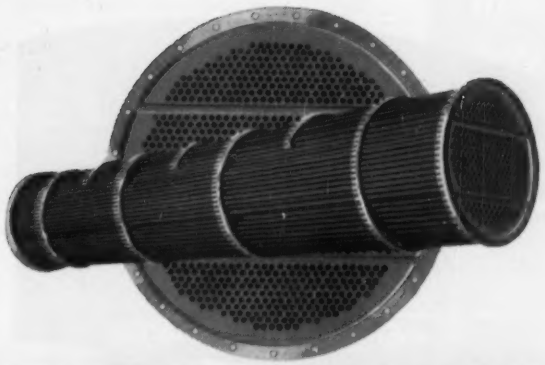
The unlimited adaptability of basic Nichols Herreshoff and Bethlehem Wedge Multiple Hearth design makes these furnaces among the most versatile tools of industry. Shown here are just a few of the many materials being processed in this equipment every day on practically every Continent of the World. Nichols engineers will be glad to discuss Multiple Hearth thermal processing with you.

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Inquiry Code Number for This Advertisement-187



FIRST FOR LASTING QUALITY—FROM MINE TO MARKET!



For dependable "on-stream" performance...
retube your exchangers with

PHELPS DODGE HEAT EXCHANGER TUBES!

Wide selection of copper-base alloys for every type of application—including bi-metal combinations.

Complete warehouse stocks maintained at Houston, Texas; Tulsa, Okla.; Los Angeles, Cal.; Chicago, Ill.; and Bayway, N. J.

Expert assistance in solving your tube corrosion problems.

Specify Phelps Dodge . . . One of the largest suppliers of tubes to manufacturers of heat exchangers!

PHELPS DODGE COPPER PRODUCTS CORPORATION

SALES OFFICES: Atlanta, Birmingham, Ala., Boston, Buffalo, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Fort Wayne, Greensboro, N. C., Houston, Jacksonville, Kansas City, Mo., Los Angeles, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester, N. Y., San Francisco, St. Louis-Seattle, Washington, D. C.

GET SPROUT-WALDRON'S *Big Plus*



...in Materials Handling Equipment

PNEU-VAC, shown here, is one of the most modern negative-pressure pneumatic systems available . . . has proved itself in hundreds of installations. It conveys, loads, and unloads granular, pulverized, and flaky materials in tremendous volumes without exterior dusting . . . without intercontamination or infestation of products . . . without handling losses. The unit is self-cleaning and can be made to cool, to heat, to aerate, to dry.

For small and medium size bulk material handling requirements, the Sprout-Waldron pneumatic **Airo-Flow** is available. In addition, Sprout-Waldron offers complete lines of pneumatic bulk trucks, screw and belt conveyors, bucket elevators, and feeders—all with Sprout-Waldron's **BIG PLUS.**

The **BIG PLUS** gives you—at no extra cost—expert engineering guidance on installations and applications . . . plus wide selections of all types of materials handling equipment . . . plus the unique ability to "adaptioneer" equipment to meet your specific needs . . . plus 100% reliability.

Put Sprout-Waldron's **BIG PLUS** to work for you. Let us analyze your materials handling problems and recommend solutions that will cut your costs and save you money. Write for full details.

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Manufacturing Engineers Since 1866

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PR/936

1956 INVENTORY

TECHNICAL LITERATURE

Heaters, Fired Indirect—

Heating Elements, Electric

Heaters, Fired Indirect.....For heating air; special atmospheres; corrosive & non-corrosive gases; thermal chemicals; circulating oils; asphalt; for super heating vapors & other exacting duties. Bulletin 551.
191A Brown Fintube Co.

Heaters, Gradiation.....Makes available detailed literature—"Try the Gradiation Heater for Economical Ethylene Production" and bulletin, "Gradiation Heating for Petroleum and Chemical Processing."
191B Selar Corp. of America.

Heaters, Immersion.....New electric radiant translucent fused quartz immersion heater designed to solve difficult problems encountered in heating of acid electroplating & pickling solutions. Request Bulletins.
191C Glo-Quartz Elec. Heater Co.

Heaters, Immersion.....The versatile ThermX "QT" Heater is ideal for use in both small plating tanks and in an independent series in large tank installations. Replace worn-out elements with ease. Request details.
191D N. J. Thermex Co.

Heaters, Induction.....Offers new literature item listing application, features, description, operation, specifications & ordering directions for Sixty-Cycle Induction Heaters. Request your copy of Ref. No. GEA-6036.
191E General Elec. Co.

Heaters, Paint.....Accurate for precise temperature control; efficient for large or small operations; fool-proof and maintenance free; simple and economical to operate. For details, request Form No. 1E-144-B.
191F DeVilbiss Co.

Heaters, Radiant.....Illustrates the "10 Big Advantages of Far-Infrared." Contains full catalog data—sizes available & prices, also lists input controllers for infinite control of intensity. Product Bulletin CS-604.
191G Edwin L. Wiegand Co.

Heaters, Screen . . . . . Hanco electric screen heaters are used in industry for the efficient heating of wire screens by electricity. For complete details, request "The Key to Successful Screen Heating."
191H F. R. Hannon & Sons.

Heaters, Steam Water.....Thoroughly illustrated 12 p. brochure describes the Johnson line of "Instant" steam water heaters . . . for instantaneous booster or storage heating of water. Request copy of Bulletin "H."
191I Johnson Corp.

Heaters, Unit.....Gives full details on the right units to handle your heating, ventilating or makeup air problem—including air diffusion distances for each unit & capacity up to 35,000 cfm. Bulletin 3704A.
191J Buffalo Forge Co.

Heaters, Unit.....Discover the many valuable features of the Unitherm unit heater . . . available for steam or hot water operation, floor or ceiling installation, in a wide size range. Catalog No. 1115.
191K Clarage Fan Co.

Heaters, Unit.....Grid unit heaters feature trouble-free heating service in the major chemical plants for over 25 years—no maintenance or repairs. Get the full story in booklet, "Corrosion in Unit Heaters."
191L D. J. Murray Mfg. Co.

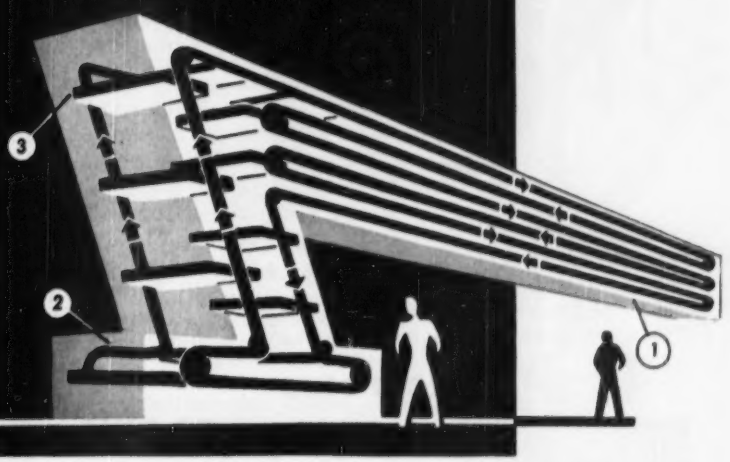
Heating Elements, Electric.....New 24 p. booklet features tubular, strip, water & oil immersion types & domestic water heating elements in both standard & custom-made design. Illustrated Publication EC-53.
191M Cutler-Hammer.

Now COOL, HEAT or DRY your products in a fraction of the floor space with a GREER MULTI-TIER

. . . because a MULTI-TIER provides 100 to 1000 feet of cooling, heating, or similar processing travel in floor space as small as 15 feet.

Gives you 10 minutes to 10 hours of overhead processing travel with exact time, temperature, and atmospheric control.

In one application alone, Multi-Tiers replaced three men, boosted production, in one-third the floor space.



1. Saves floor space — ample headroom.
2. Conveys products through controlled processing cycles without jar or jolt. Automatic or manual loading and unloading. Easily enclosed to meet wide range of cooling or heating requirements.
3. Trays always perfectly level. Custom fitted to your products.



WRITE 8-page bulletin tells how a Multi-Tier can save you time, labor, and floor space. Send for your copy.

J. W. GREER COMPANY

Wilmington, Massachusetts

Sales Engineering Offices: Chicago, Ill., San Francisco, Calif.

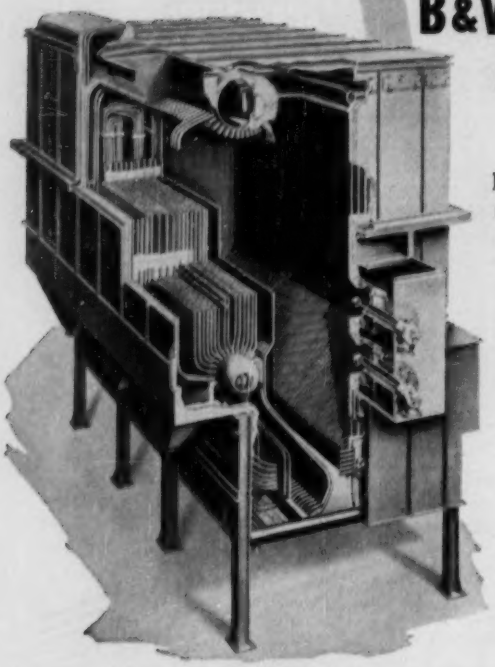
GREER

a good "family" to know for

low-cost steam

B&W Integral-Furnace Boilers

For Steam Requirements to 350,000 Lb/Hr



TYPE FH—50,000-350,000 lb/hr up to 1050 psi. Pulverized-Coal, Oil, and Gas Firing.

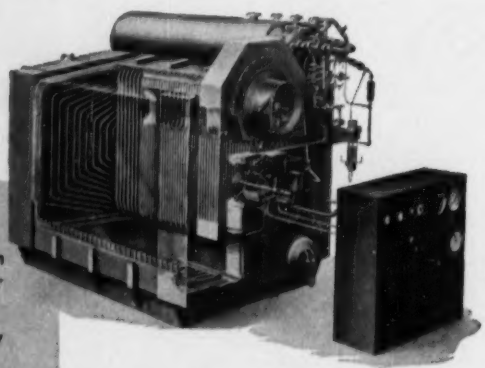
Long established as the leading choice of industrial and other users for an ever-growing variety of applications, B&W Integral-Furnace Boilers of every type and rating, and covering an unusual range of steam requirements, are *service-proved . . . your proof* of lower steam costs combined with higher service life. Total capacity of B&W Integral-Furnace Boilers—in service and on order—is well over 200,000,000 lb per hr. This sweeping acceptance by users is your strongest possible assurance of B&W reliability and economy.

Before planning your next installation, check with B&W for the Integral-Furnace Boiler best suited to your needs. These units are available for all standard fuels, and B&W can also meet your requirements should conditions demand the use of special fuels. Write for illustrated bulletins covering B&W Integral-Furnace Boilers in greater detail. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

FROM THIS

TO THIS

and any capacity in-between



TYPE FM—to 40,000 lb/hr at operating pressures to 235 psi. Also available at higher pressures and with moderate superheat. Oil and Gas Firing.

COST SAVING FEATURES

- Minimum floor space and headroom requirements.
- High fuel economy.
- Smokeless combustion.
- Adaptable to all fuels and firing methods.
- Economical fast steaming.
- Water-cooled furnace.
- Clean, dry steam at all ratings even with high boiler water concentrations.
- Quick response to wide and heavy load swing demands.
- Easy to inspect and clean.
- High availability with least attention.

BABCOCK & WILCOX

BOILER DIVISION

G-735

1956 INVENTORY

TECHNICAL LITERATURE

Heating Equipment—

Ovens & Furnaces

Heating Equipment.....Subcomco Application Manual explains general nature of Submerged Combustion, shows many applications and compared installation and operating costs with conventional equipment.
181a *Submerged Combustion Co.

Heating, Steam, High Pressure.....Describes method completely utilizing both the sensible & latent heat of high pressure steam. Trustworthy, long lived equipment for heating or process. Bulletin No. 109.
195e Niagara Blower Corp.

Heating Systems, Dowtherm.....Furnishes descriptive information on Dowtherm heating systems for processes requiring precision control of high constant temperatures at low pressures, in Bulletin ID-54-5.
31b Foster-Wheeler Corp.

Heating Systems, Hot Water.....Covers new packaged Iso-Therm hot water heating system designed to solve problem of how to get a maximum amount of hot water for peak loads with a limited size boiler. Bul. 920A.
193A Fred A. Schaub Engrg. Co.

Heating Tapes.....Electrothermal heating tapes are safe—economical—efficient surface heaters . . . for use wherever heat is required in the laboratory and in production. Details in 6 p. illustrated Bulletin.
193B Arthur S. LaPine & Co.

Heating Units, Digester Sludge.....Illustrated, 20 p. describe the HEATX digester sludge heating unit. Includes complete details on the application, construction and operation of the HEATX. Bulletin No. 24S82.
193C Walker Process Equipment.

Heating Units, Electric.....Feature many cost saving advantages: low installation cost; clean electric heat; long heater life; continuous production; etc. Complete information offered in Catalog No. 50.
193D Edwin L. Wiegand Co.

Heating Units, Immersion.....Your fuel dollar buys more effective heat transfer with "Surface" immersion heating than with other methods of heating liquids and salts. Details contained in Bulletin H55-4.
193E Surface Combustion Corp.

Hot Oil Systems, Electrically Heated.....Merrill Process Systems produce any oil temperature within range of 150-160° F at low pressure in a compact, completely assembled packaged unit. See Bulletin 1255.
193F Parks-Cramer Co.

Humidifiers.....New booklet describes humidifiers for "small" rooms . . . shows how plants can cure small room humidification problems by a single steam humidifier installation. Request illustrated Bulletin 501.
193G Armstrong Mach. Wks.

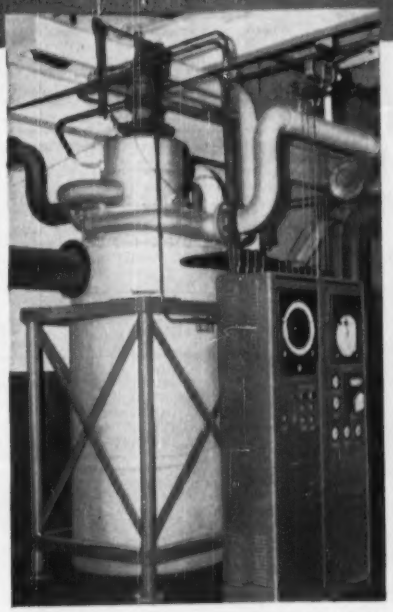
LP-Gas Plants, Packaged.....Company announces the development of a self-contained, fully automatic, packaged LP-Gas plant for industrial and utility use. Complete information supplied in Bulletin GP-150.
193H American Liquid Gas Corp.

Ovens.....Ross' gas fired oven is being utilized to insure proper solution of entirely new processing problems. Leading manufacturers rely upon recommendations by Ross to achieve the exact curing results. Bulletin S-3.
193I J. O. Ross Engrg. Corp.

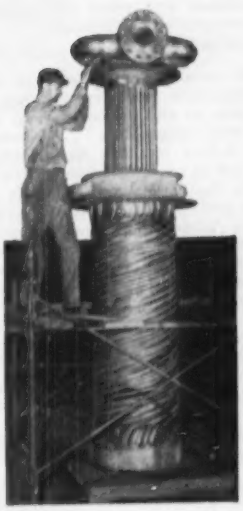
Ovens & Furnaces.....Illustrated booklet describes Blue M electric ovens and furnaces and related equipment. Includes laboratory ovens, utility ovens, portable cooling coil, ultra-temp ovens, etc. Bulletin 5520.
193J Ace Glass.

* From advertisement, this issue.

THERMAL
FIRED HEAT EXCHANGERS



a compact means of heating air or process gases for testing or production



THERMAL HIGH VELOCITY BURNERS MAKE THESE HEAT EXCHANGERS POSSIBLE...

Whether it be an existing standard design or a unit for special requirements, THERMAL heat exchangers provide the ultimate in compactness, high performance and response. These heat exchangers are always designed around the high velocity, clear flame combustion characteristics of THERMAL burners. Convection is thus the primary means of heat transfer thereby promoting uniform metal temperature and longlife. THERMAL Heat Exchangers are supplied as complete package installations including all control and accessory equipment.

DESIGNS AVAILABLE FOR:

Pressures from 0 to 1500 PSIG. Temperatures from 300°F to 1500°F. Heat transfer ratings from 250,000 BTU/hr to 35,000,000 BTU/hr.

Other Thermal Products & Services

Gas, Oil & Combination Burners • Air Heaters • Submerged Combustion • Combustion & Heat Transfer Equipment

THERMAL

Thermal Research & Engineering Corp.

CONSHOHOCKEN • PENNSYLVANIA

REPRESENTATIVES IN PRINCIPAL CITIES



corrosion

EXTERNAL — from contaminated air

INTERNAL — from electrolytic action

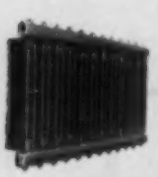
ends-



When your unit heaters are GRID Cast Iron construction . . . GRID heating sections and headers are made of high-test cast iron . . . no *external corrosion from acid fumes.* All metals in contact with steam are similar . . . no electrolytic action internally . . . no internal corrosion.

GRID construction ends your unit heater maintenance problems—because GRID will operate on steam pressures up to 250 P.S.I. . . . 450° temperature . . . no pressure-reducing valves needed. No soldered, brazed, welded or expanded connections . . . a specially designed threaded nipple provides a leak proof joint. GRID design gives you maximum heating performance because—GRID provides more air changes at lower outlet temperatures . . . carefully selected motor speeds and fan capacities positively deliver warm, comfortable air in ample volume to floor level . . . no wasted heat through stratification. GRID installations save you money as GRID requires no maintenance . . . is practically self-cleaning. GRID provides long service life . . . units installed in 1929 are still operating. No ordinary unit heater approaches GRID's record for continuous trouble-free heating service.

GRID BLAST HEATERS construction as GRID Unit Heaters . . . Same cast iron construction as GRID Unit Heaters . . . no tortuous air passages . . . free from ruptures, strains and warping . . . compact, they occupy less space than other types of equal capacity . . . their open design makes possible easy cleaning . . . steam pressures up to 250 P.S.I. Write today for complete details on GRID Unit Heaters, GRID Blast Heaters and GRID Radiation for chemical plant use.



D. J. MURRAY MANUFACTURING CO.

MANUFACTURERS SINCE 1883

WAUSAU, WISCONSIN

Heaters & Coolers

TECHNICAL LITERATURE

Ovens, Industrial—

Vaporizers, Dowtherm

Ovens, Industrial.....Your oven needs . . . large or small batch or continuous production for drying, baking or dehydrating . . . can be filled by Kirk & Blum. For details, request Booklet, "Industrial Ovens."
194A Kirk & Blum Mfg. Co.

Ovens, Laboratory & Production..... New, illustrated brochure describes re-designed models of laboratory & production ovens. Includes new engineering, construction & control features for "V" series ovens. Bul. 100.
194B Despatch Oven Co.

Panels, Radiant.....Radiant panels for faster web heating; extra wide radiant panels for web heating in paper, textile, plastics & other operations; catalog data, specifications, advantages. Product Bulletin CS-606.
194C Edwin L. Wiegand Co.

Platecoils.....Designed for tank heating and cooling problems due to inefficient pipe coils. These cost-saving plate coil heat or cool 50% faster and take 50% less space in the tank. Offers Bulletin No. P61.
194D Tranter Mfg.

Preheaters, Air.....The Ljungstrom boosts products' quality & its heat-recovery efficiency makes possible advanced furnace designs that assure close control of processing. For information, request product data.
194E Air Preheater Corp.

Pumping & Heating, Fuel Oil.....Gives information on fuel oil pumping & heating units designed to prepare, for combustion, all grades of fuel oil including No. 6 or Bunker "C" oil & residiums. Bulletin 40.
194F National Airoil Burner Co.

Refrigerating Machines, Absorption..... Machines which produce large-capacity cooling from steam, have no major moving parts & use plain water as a refrigerant, are fully described in 36 p. Catalog A.I.A. 30-F-22.
194G Carrier Corp.

Refrigeration Condensing Units..... Offers commercial units from ¼ to 10 H.P. Discusses air cooled and water cooled units, capacity control, dimensional data, gasoline driven units and truck units. Catalog 47.
194H Brunner Mfg. Co.

Refrigeration Equipment.....50 p. gives complete data on CenTraVac centrifugal refrigeration equipment, which is used to provide chilled water for air conditioning & refrigeration systems. Illustrated Bulletin DS-399.
194I Trane Co.

Refrigeration Products.....Preassembled refrigeration parts of aluminum eliminate heliarc welding & assembly operations, save process handling operations, improve production line efficiency, save time & money.
194J Wolverine Tube Div.

Sprayed Coil Equipment.....24 p. of data covering new line of Clarage Unicoil Units. Principally designed for cooling & dehumidifying service in central station systems. Features & advantages in Catalog No. 411.
194K Clarage Fan Co.

Steam Systems.....Sterile, Pyrogen-Free Water from Boiler Steam with Selas Sterile-Aqua System. New direct method produces up to 500 gallons per hour automatically, economically. Offers descriptive literature.
194L Selas Corp. of America.

Tandem Combustion Units, Oil-Gas..... You will realize higher profits from your heaters when National Airoil vertical or horizontal tandem units are specified. For full details, request Bulletin 498.
194M National Airoil Burner Co.

Thermo-Panels.....Cost less & perform better—an improvement on pipe coils. You save space & heat or cool more efficiently. For use in heating & cooling of liquids, slurries, soaps, etc. Bulletins 255 & 256.
194 Thermo-Panel Div.

Towers, Cooling.....Extra long gear and bearing life of Fluor-Western speed reducers is an important factor in overwhelming preference for Fluor cooling towers. Offers bulletin, "Cooling Water for Industry."
194N Fluor Corp.

Towers, Cooling.....Special features. Superior shaft seals, heavier bearings, more conservative horsepower ratings, more rigid housing & more positive lubrication. Get your new Pritchard Cooling Tower brochure.
194O J. F. Pritchard & Co.

Towers, Cooling.....Pritchard Cooling Tower framework is a big step in cooling tower design. "Answers to the 15 Questions About Pritchard Induced Draft Cooling Towers" furnishes valuable tips.
194P J. F. Pritchard & Co.

Towers, Cooling.....New 20 p. booklet, "Test Your Tower," describes simple direct method by which purchaser of industrial cooling tower can assure himself that he will receive performance exactly as specified.
194Q Marley Co.

Towers, Cooling.....Announces new line of Flow-Mizer cooling towers in capacities from 15 through 100 tons. Features stepped-up capacities and increased efficiency with advanced-design Acme-Pak. Request details.
194R Acme Industries.

Towers, Cooling.....Fw new line of induced-draft, counter-flow cooling towers. Maximum dependability and long-range economy. For detailed information, request of copy of Bulletin CT-56-1.
31e *Foster Wheeler Corp.

Towers, Cooling.....12 p. catalog on new "MT" line of heavy duty, quiet operating cooling towers. Covers complete line . . . 23 sizes, from 10 to 400 tons . . . for air conditioning & refrigeration. Bulletin 202.
194S Baltimore Aircoil Co.

Towers, Cooling..... Stainless—2-150 tons. Suitable for indoor or outdoor location. Quiet operating. Marlo heat transfer equipment now available to your specifications. Request further information.
194T Marlo Coil Co.

Traps, Cold.....Offers new literature item listing application, features, description, specifications, principle of operation & ordering directions for cold traps for liquid sodium system. Ref. No. GEA-6456.
194U General Elec. Co.

Traps, Steam.....Covers Thriftraps . . . a complete line of compact, versatile, high-capacity traps. Inverted bucket type traps feature economy—in initial cost & long, trouble-free service. Request Section No. 601.
194V Clark Mfg. Co.

Traps, Steam.....Makes available "Piping Diagram and Steam Trap Selector" which contains Yarway Impulse Steam Trap recommendations for typical chemical processing equipment. Request illustrated Ref. No. T-9 (55).
194W Yarnall-Waring Co.

Traps, Steam.....The right steam trap for light condensate loads . . . Yarway 20-A Impulse Steam Trap. Features small size, stainless steel body & working parts, low cost, etc. Bulletin T-1739-X.
194X Yarnall-Waring Co.

Traps, Steam.....Yarway Impulse Steam Traps feature: small size — lightweight; only one moving part; stainless steel; won't freeze up. For complete information request Trap Selector 24 p. Bulletin.
194Y Yarnall-Waring Co.

* From advertisement, this issue.

1956 INVENTORY

Traps, Steam.....Illustrated literature describes Sarco's Type TD-50 Thermodynamic steam traps . . . for pressures 10-600 psi and temperatures to 950° F. Includes numerous features. Supplement No. 255-44.
195A Sarco Co.

Traps, Steam.....Design superior in retaining prime under most difficult operating conditions: light loads, rapid pressure drops & partial vacuum in return line caused by night shut-downs. Bulletin 360-A.
195B Sarco Co.

Traps, Steam.....Float Thermostatic steam traps keep heating surfaces at top efficiency by discharging condensate practically at steam temperature, continuously and without shock. Data contained in Bulletin No. 450.
195C Sarco Co.

Traps, Steam.....Machined from a solid block of stainless steel, this trap has only 3 parts . . . cap, disc, & body . . . no valve-closing mechanisms. Only moving part is a solid steel disc. Request Bulletin No. 257.
195D Sarco Co.

Traps, Steam.....In toughest chemical processing service, Nicholson pays off 4 ways: lower initial cost; less upkeep expense; faster warm-up; faster production. For complete trap data, request Catalog No. 953.
195E W. H. Nicholson & Co.

Traps, Steam.....Give faster, more effective condensate removal. Powerful valve action, positive shut-off, high capacity & each unit service tested. For more details, request new Bulletin No. 10-55.
195F W. H. Nicholson & Co.

Traps, Steam.....Straight-through steam trap design saves time & fittings for Jones & Laughlin Aliquippa Wks. If you're interested in straight-through piping, request 36 p. book, "Solving Steam Trap Problems."
195G V. D. Anderson Co.

Traps, Steam.....Company's product line features long trap life with infrequent maintenance. Makes available on request a 44 p. Steam Trap Book with practical information designed to give you better trapping.
195H Armstrong Mach. Wks.

Tubes, Condenser.....Announces availability of 156 p. Bridgeport Condenser Tube Handbook containing helpful data on condenser tube alloys, Duplex tubes, corrosion of all types & numerous other subjects.
195I Bridgeport Brass Co.

Tubes, Condenser.....For condenser & heat exchanger tubes & plates specify Revere—cupro-nickel—30%, 10%; admiralty metal; arsenical copper; aluminum bronze—5%; etc. "Life Extension for Condenser Tubes."
195J Revere Copper & Brass.

Tubes, Heat Exchanger & Condenser.....Makes available a 12 p. reference furnishing detailed information on stainless steel tubing for heat exchangers and condensers. Request illustrated Brochure No. HES-1.
195K Republic Steel Corp.

Vaporizers.....Newest Union Packaged Vaporizer—Type MH—provides broad range of temperatures at low pressure for process heating. Details of this and other process heating equipment in illustrated Bulletin DV.
195L Union Iron Wks.

Vaporizers, Dowtherm.....Firetube Dowtherm vaporizers & heaters provide safer, more dependable heating & low maintenance. Includes diagrams of nine basic Dowtherm systems in detailed 28 p. Bulletin A-100.
195M Eclipse Fuel Engrg. Co.

Vaporizers, Dowtherm.....International-LaMont dowtherm vaporizers provide accurate temperatures from 500°–750°F for the process industries. Specific features of advanced design described in Bulletin.
195N International Boiler Wks.

AIR Engineering EQUIPMENT

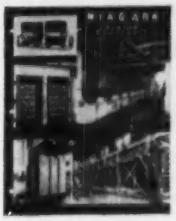
AIR CONDITIONING



Bulletins describe methods of obtaining precise control of temperature and moisture to help you make your product in any climate at any season. Illustrated with diagrams and photographs.

BULLETIN No. 122
BULLETIN No. 112

DRYING AND DEHUMIDIFYING



Bulletins illustrate air conditioning cabinet and drying installations including siccative coatings, paper, plastics, provisions, confectionery, pharmaceuticals, metallurgical uses.

BULLETIN No. 88
BULLETIN No. 112

HIGH PRESSURE STEAM HEATING



Bulletin describes method completely utilizing both the sensible and latent heat of high pressure steam. Trustworthy, long lived equipment for heating or process.

BULLETIN No. 109

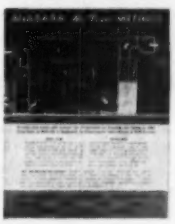
AERO AFTER COOLER



Describing equipment for cooling compressed air or gases, holding temperatures below ambient atmospheric to prevent condensation of moisture. Includes application to air liquefaction systems.

BULLETIN No. 130

COOLING AND FREEZING



Bulletins describe Niagara "No-Frost" method; production of extreme low temperature for industrial uses or food freezing, precooling and storage.

BULLETIN No. 95
BULLETIN No. 105

REFRIGERANT CONDENSING



Bulletins describe evaporative refrigerant condensers providing protection against scaling of tubes, controlling of compressor head pressures, saving condenser water.

BULLETIN No. 111
BULLETIN No. 125
BULLETIN No. 131

LIQUID COOLING



Cooling for chilled water or solutions, with elimination of freeze-up danger, with rapid chilling of large fluid volume and close temperature control.

BULLETIN No. 104

VAPOR CONDENSING



Providing high vacuum, independent of a large supply of cooling water. Solves the problems of water supply and disposal. Fully automatic. Saves power. Saves steam.

BULLETIN No. 129-R

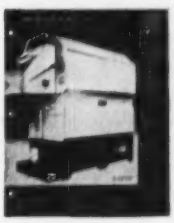
MOTOR BLOWERS



Bulletin describes blowers in two series up to 4" static pressure. Available in one, two and three fan assemblies. Applicable to ventilating, drying, air conditioning.

BULLETIN No. 89

AERO HEAT EXCHANGER



Bulletins describe evaporative cooling apparatus that keeps control of temperature within two degrees by modulating the flow of air. Saves 95% of cooling water. Provides heat when needed.

BULLETIN No. 120
BULLETIN No. 124
BULLETIN No. 132

For further information write Dept. CE

NIAGARA BLOWER COMPANY

405 Lexington Avenue **New York 17, N. Y.**

Actuator, Valve

Works remotely. (196A)

. . . Remote plug valves are operated by the compact, self-contained Robot-arm valve actuator. This diaphragm-operated, double-acting mechanism works through a rack and gear assembly.—*Bettis Corp., Houston, Tex.*

Actuator, Valve

Fills missing link in electronic control systems. (196B)

. . . Designed for use with electronic control systems, the Electro-Hydraulic valve actuator eliminates need for air pressure to operate the control valve. Actuator is a complete self-contained unit including control valve, hydraulic power source and proportional positioning mechanism. It can be used with existing electronic controllers.—*Askania Regulator Co., Chicago, Ill.*

Alarm, Gas

Portable, self-contained. (196C)

. . . Analyzer and alarm unit for combustible gases is a continuous sampling system operated by motor-driven pump mounted inside. Features include visual and audible "high-gas" signals; large, readily visible meter calibrated zero to lower explosive limit to show gas or vapor concentration at all times; built-in "trouble-indicating" circuit with indicating light and audible signal.—*Davis Instruments, Newark, N. J.*

Alarm, Overflow

Warns against tank overflow during filling operation. (196D)

. . . When liquid level rises near the overflow point during tank filling operations, the Falcon tank-overflow horn sounds a warning that can be heard more than 1,000 ft. away. The signal continues for two to four minute intervals and it prevents dangerous and costly tank overflow due to failure of automatic equipment.—*Falcon Alarm Co., Summit, N. J.*

Analyzer, Infrared

For pilot plants. (196E)

. . . Versatility and easy adaptability in determining material balances and over-all yields make Model 176 dispersive infrared analyzer especially suited for pilot plant operation. Analyzer's dispersive design uses a prism-slit optical arrangement to permit handling mixtures that absorb varying wavelengths.—*Beckman Instruments, Inc., Fullerton, Calif.*

Analyzer, Infrared

Non-dispersive, for difficult process streams. (196F)

. . . The Cary Model 70 infrared analyzer, a dual beam, non-dispersive instrument, permits analytical control of difficult process streams. Employing selective detectors, analyzer measures energy loss of infrared beam passing through sample.—*Applied Physics Corp., Pasadena, Calif.*

Analyzer, Photoelectric

Automatically analyzes liquids, vapors, gases. (196G)

. . . The new Model III Photoelectric Analyzer automatically analyzes liquids, vapors and gases to control chemical processes. Instrument makes accurate record automatically for many days. Self-monitoring, the new photoelectric analyzer checks and resets itself to compensate for any smudge accumulation on cell windows or other sources of error.—*Manufacturers Engineering & Equipment Co., Hatboro, Pa.*

Analyzer, Sound

Combines functions of four seperate instruments. (196H)

. . . Increasing concern with industrial noise problems has prompted the development of a sound analyzer that incorporates all essential functions in one instrument. The 20-lb. instrument takes the place of four individual units previously required to analyze noise. The Soundscope meter measures over-all sound levels, determines noise peaks and checks sounds in narrower frequency bands.—*Mine Safety Appliance Co., Pittsburgh, Pa.*

Balance, Gas Density

Works on null balance principle. (196I)

. . . To measure density of gas samples as small as 10 c.c., a small dumbbell is supported on a horizontal quartz fiber. One ball of the dumbbell is punctured so it won't react to buoyancy effects. The other ball tends to rise and dip as the density of the gas increases or decreases. As the dumbbell seesaws, it creates a rotational force that varies with the density of the gas. But, an electrostatic force acts to keep the dumbbell in a null position. This balancing potential, which is proportional to the gas density, serves to operate a meter mounted on the door of the balance.—*Arnold O. Beckman, Inc., South Pasadena, Calif.*

Calibrator

For strain gages. (196J)

. . . A new primary calibrator for strain gages, load cells, etc., is claimed highly accurate up to 20,000 lb. Device is completely self-contained.—*American Instrument Co., Silver Spring, Md.*

Computer, Analog

Inexpensive kit form. (197A)

. . . Analog computer now available in kit forms owes its low cost and flexibility to the use of a standard voltage reference supply and also to a dividing network.—*Heath Co., Benton Harbor, Mich.*

Control

Combines benefits of electronic and pneumatic systems. (197B)

. . . For processes that normally require a pneumatic system, the Electro-Pneumatic control offers all the advantages of pneumatic valve operation combined with a flexible and rapid electrical control system. Changes in process variable are measured by the electronic recorder or indicator and relayed to control unit. The current of the control unit is balanced in electro-pneumatic converter against air output of converter which operates a pneumatic valve. — *Leeds & Northrup, Philadelphia, Pa.*

Controls, Electronic

Low-cost versatile systems. (197C)

. . . A large percentage of industrial control problems now can be handled by electronic systems assembled from a series of 21 standard "building block" components. Cost of systems is one-half to two-thirds less than traditional made-to-order systems.—*Sparks-Withington Co., Jackson, Mich.*

Control, Flame

Electronically guards against flame failure. (197D)

. . . New Flame-Control combustion safeguard systems include 1400 Series based on principle of flame rectification and 1500 Series using a lead sulfide photo-conductive cell that is responsive to infrared. Pre-wired control centers house combustion safeguards, and all other components.—*Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.*

Control, Temperature

Gives control point accuracy equivalent to calibrated units. (197E)

. . . Design of the new E32N indicating temperature control provides a calibrating mechanism to compensate for movement errors of commercial thermal systems. Where the E32N is used, such systems can be replaced in the field without loss of initial accuracy. On-off differential is 0.5 F. —*United Electric Controls Co., Watertown 72, Mass.*

Control, Temperature

Holds temperature on set point over wide range. (197F)

. . . Process temperatures up to 2,500 F. can be controlled within 1% of scale with the model PB indicator-controller. Operating on a current of less than one microampere, instrument has a long life expectancy. Pyrometer unit in the instrument indicates temperature under control up to the control point. Available in ranges of 0 to 600, 1,000, 1,500, 2,000 and 2,500 F.—*Automation Instrument Corp., Philadelphia, Pa.*

Control Center

Scans, indicates, controls. (197G)

. . . New Trans-Scan-Log system is a compact intelligence center which combines coordination of all related process data with the most modern techniques of scanning and logging. Indicators and recorder receivers are concentrated in minimum space. With these removed, graphic panel size is cut 75%. Operator has all the data on which to base corrective action.—*Taylor Instrument Cos., Rochester, N. Y.*

Control System

Flexible and rugged. (197H)

. . . The ElectroSyn system utilizes electro-magnetic elements to indicate, measure, record or control any number of process variables. It can be applied on pressure, differential pressure, flow, liquid level and temperature. Three components: A signal transmitter, a servo amplifier (magnetic) and a null balance indicator.—*Norwood Controls, Norwood, Mass.*

Controller, Liquid Level

Ruggedly built probe assemblies. (197I)

. . . A complete line of probe assemblies has been introduced for controlling liquid level in the processing industries. Each is ruggedly constructed. For example, the MED-2048A double-electrode probe incorporates alumina electrode insulation, stainless conducting portions for electrode. — *Machinery Electrification, Inc., Northboro, Mass.*

Controller

For mounting on standard rack. (197J)

. . . A new all-electronic controller can be mounted on a standard radio relay rack. It is available with prefabricated cable for connection to the other components in the manufacturer's electronic process control system. Simple rack-mounting allows accessibility for adjusting controls. Control units can be mounted one above the other with all control adjustments at the front.—*Manning, Maxwell & Moore, Inc., Stratford, Conn.*

Controller, Pneumatic Level

For gas operated switching systems. (198A)

. . . Designed for tank switching systems where gas or air pressure is the operating medium, this pneumatic level control is available in two models. One trips the switch at high levels, the other at both high and low levels.—*The Vapor Recovery Systems Co., Compton, Calif.*

Data Processing Center

Tackles any problem on fee basis. (198B)

. . . Last year IBM opened a new electronic data processing center in New York that contains an integrated team of so-called "giant brains." The versatile combination of machines makes available to companies, on an hourly charge basis, the latest tools for scientific management.—*International Business Machines Corp., New York, N. Y.*

Data Reduction

System just for industrial use. (198C)

. . . First unit of the new Beckman Data Handling System will be installed in Esso's Baton Rouge, La., pilot-plant refinery. System will take electrical input signals from 50 sensing instruments, convert them to digital form for reproduction on paper tape, punched cards or automatic typewriter. System can be expanded to handle as many as 1,000 input signals.—*Beckman Instruments, Inc., Fullerton, Calif.*

Densitometer, Photoelectric

Checks gases and liquids. (198D)

. . . New photoelectric densitometer, set P4S, can eliminate smoke nuisance in stacks and ventilating ducts, monitor light transmission or optical density of liquids in process lines, regulate turbidity in water and sewage treatment.—*Photoswitch Div., Electronics Corp. of America, Cambridge, Mass.*

Detector, Fire

Radioactivity detects fire inception. (198E)

. . . The C-O-Two Pre-Detector senses combustible gas and smoke to actuate its alarm while a fire is still in the incipient stage. Overhead detection device connected electrically to a fire-indicating cabinet contains two ionization chambers, activated by alpha radiation, and a highly-sensitive gas discharge tube.—*C-O-Two Fire Equipment Co., Newark 1, N. J.*



Enclosure, Instrument

Read without opening. (198F)

. . . Instrument enclosure for meters and gages on hazardous locations permits instrument to be read without opening enclosure. Threaded cover and a heavy round glass window.—*Pyle-National Co., Chicago, Ill.*

Fitting, Tube

For copper instrumentation lines. (198G)

. . . The Intro-lok fitting for instrumentation lines supersedes a heavier, more bulky style brass fitting furnished previously for this application. New fitting features easy, "in-true" tube entry and quick connection without disassembly of the fitting.—*Parker Appliance Co., Cleveland, Ohio.*

Flowmeter

Based on ultrasonics. (198H)

. . . Tabbed as the world's first successful industrial ultrasonic flowmeter a new instrument accurately measures either mass or volumetric flow. Accuracy is not affected by pressure, viscosity, gas bubbles, solids in suspension, electrical conductivity or position of installation. Pressure drop is said to be virtually zero.—*Fischer & Porter Co., Hatboro, Pa.*

Flowmeter, Inertial Mass

Gets the information by "weighing." (198I)

. . . Density, temperature or viscosity of the liquid or gas flowing through this inertial mass flowmeter need not be known in order to get the mass rate reading. A known, constant-angular velocity is imparted to the fluid by the meter. Deflection of a calibrated spring, proportional to the torque required to stop the rotation, is sensed by a signal generator. The true mass flow rate, proportional to the signal voltage, is displayed on a dial indicator or directed to a digital counter or totalizer.—*Inertial Instrument, Inc., Santa Monica, Calif.*

→ Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Gage, Pressure

Operates at high temperature. (199A)

. . . A pressure gage that is not sensitive to temperature has been developed for prolonged exposure to high temperature and radiation. Gage may be installed on any pipe or vessel for use with high temperature liquids or gases. Instrument consists of a bellows, a differential transformer and a meter to show changes in the transformer output. Change in pressure on bellows moves transformer core.—*Callery Chemical Co., Callery, Pa.*

Gages, Tank

Operated by hydrostatic pressure (199B)

. . . The new Series 1400 Petrometer remote-reading liquid-depth gages can be installed rapidly and conveniently on tanks up to 50 ft. deep either above or below ground. Liquid depth indicated accurately on panel located anywhere within ½ mile from the point of measurement. Operated by pneumatic pressure.—*Liquidepth Indicators, Inc., Long Island City 1, N. Y.*

Gage Saver

For many systems. (199C)

. . . Gage saver for hydraulic, fuel or pneumatic system is designed for maximum pressure of 10,000 psi., can be furnished as a standard unit for 50 to 5,000 psi.—*Fisher Controls Co., Santa Monica, Calif.*

Indicator, Bin Level

For jobs diaphrgam indicator can't handle. (199D)

. . . Some bins present special problems in measuring level. That is the reason for the development of the new Roto-Bin-Dicator. It can be used under pressure or vacuum; where there are large lumps that tend to bridge over a diaphragm-type indicator; or where materials tend to "rathole" preventing operation of a diaphragm.—*Bin-Dicator Co., Detroit, Mich.*

Indicator, Flow

Monitors liquid flow in pipeline. (199E)

. . . Using a standard tee pipe fitting for a body, Model FI-200 flow indicator shows liquid flow or lack of flow through a pipeline. Flow through the unit actuates a switch that can be utilized for operation of a pilot light, horn or other warning signal.—*Gems Co., Newington, Conn.*

Indicator, Heat

Thermocouple thermometer. (199F)

. . . To make possible quick visual checking of critical temperature points a Check Well combines a sensitive thermocouple with a dial type thermometer. High response rate is due to small ¼-in. O.D. thermocouple protection tube with low mass, low thermal inertia and to light-gage thermocouple element with hot junction bottomed in tube.—*Conax Corp., Buffalo, N. Y.*

Indicator, Level

For solvents, oils, acids. (199G)

. . . Control or indication of liquid level is the function of the F-8685 hermetically sealed float-level indicator. It has no exposed metal parts, may be used with many metals.—*Revere Corp. of America, Wallingford, Conn.*

Indicator, Sight Flow

Indicates, checks back flow. (199H)

. . . For the first time, flow indication has been combined with positive checking of back flow in the Fig. 213 bull's-eye check-valve indicator. Designed primarily for LPG and anhydrous ammonia service, indicator has been approved for the former.—*Fischer & Porter Co., Hatboro, Pa.*

Integrator, Data

Computes, evaluates quality, handles data. (199I)

. . . A new electronic data integrating system (EDIS) designed for Esso Standard Oil Co.'s Bayway refinery is believed to be the first system to incorporate computing and quality evaluation with conventional automatic data-handling operations. Operating on a commercial solvent production line and priced in the $10,000-$50,000 range, the system will automatically log temperature, pressure, flow, power, consumption and product quality data.—all the operating variables that must be recorded.—*Minneapolis-Honeywell Regulator Co., Philadelphia, Pa.*

Integrator, Flow

Centrifugal principle. (199J)

. . . Pneumatic integrator, model 14A, provides continuous linear integration of industrial process flows to within ½% accuracy. It is unique in that no cams are needed for extracting square roots.—*Foxboro Co., Foxboro, Mass.*

Manometer, Diaphragm

Links to recording and controlling instruments. (199K)

. . . Intended primarily to actuate various controlling, recording and indicating instruments this diaphragm manometer measures vacuum, pressure and differential pressure. Only limitation: that range does not exceed four inches of water, static pressure is not over 5 psig. For rugged, reliable service.—*Taylor Instrument Cos., Rochester, N. Y.*

Meter, Moisture

Measures, indicates, records, controls. (200A)

. . . Simple, new two-unit instrument continuously controls moisture content of free-flowing solids. Control of moisture variance is very accurate, increasing as the range of particle sizes narrow. Over-all efficiency of drying, cooling and tempering processes is increased appreciably.—*The Quaker Oats Co., Mechanical & Electrical Div., Akron, Ohio.*

Meter, pH

Measures continuously at high temperature and pressure. (200B)

. . . Measurement of pH is handled continuously at temperatures up to 200 C. and pressures at 200 psi. using the CAE system. Accuracy is 0.05 of a pH unit and drift over 24 hr. is not over 0.1. Ranges giving a full scale deflection of 0-5 or 0-10 pH are standard for this meter.—*Canadian Aviation Electronics, St. Lawrence, P. Q.*

Monitor, Fail-Safe

Eliminates unsafe failure from control system. (200C)

. . . Through a new technique the possibility of unsafe failure is eliminated from industrial control systems of the electrical, electronic or mechanical type. Concept has been applied to fire-detection systems, thermostat controls, liquid-level controls and various types of photocell devices. Essentially, the Scully-Rowell fail-safe technique continually "exercises" the monitoring system to prove its operability. A signal representing the normal condition of the operating system is introduced directly to the monitoring system. Periodically, the monitoring system alters this safe operating signal to produce a simulated unsafe condition. If the normal operating signal fails, the oscillation changes to a continual unsafe condition which sounds an alarm.—*Scully Signal Co., Melrose, Mass.*

Monitor, Heat Flow

Direct reading of heat flow. (200D)

. . . First of several control instruments to incorporate a new heat-flow disk is the HFG-2 Heat Flow Monitor. This compact, portable unit reads directly in Btu. heat flow through any surface in contact with the disk. It can be used to check scores of problems ranging from the efficiency of structural, pipe or window insulation to exploring the heat loss of refrigerated or heated areas.—*National Instrument Laboratories, Inc., Riverdale, Md.*

Operators, Valve

Self-contained, needs no air supply. (200E)

. . . A new self-contained Electro-Hydraulic operator for valves controlling variables such as pressure, temperature and flow operates without compressed air. Electric powered, it overcomes the problem encountered in long distance transmission, freezing or clogging of pneumatic tubing and high cost of air supply.—*Manning, Maxwell & Moore, Inc., Stratford, Conn.*

Potentiometer

Highly sensitive transmitting unit. (200F)

. . . A new transmitting potentiometer, based on an entirely new operating principle measures and controls low voltages while drawing negligible current from the source. It is available as a thermocouple pyrometer or to measure direct-current output of electrical transducers. When used with the American-Microsen Electronic Control system the potentiometer controls temperatures closely.—*Manning, Maxwell & Moore, Inc., Stratford, Conn.*

Potentiometer-Recorder

Totally self-contained. (200G)

. . . Touting maximum accuracy, this new electronic null-balancing potentiometer-recorder measures, indicates, controls and records temperature, speed, strain, pH, and other quantities that can be resolved into electrical signals. Completely self-contained except for the external sensing element, the recorder's most important application seems to be measurement and control of pyrometric-range temperatures.—*Barber-Colman Co., Rockford, Ill.*

Pressure System

Measures up to 200 pressures at once. (200H)

. . . Now up to 200 pressures can be measured at a given instant and read out as digital values within two minutes. Initial instrumentation costs and future maintenance costs are minimized by using a single sensing device for all measurements, and a yes-no electrical system requiring no critical voltage adjustments. Readout from the system is available either on log sheets, or on punched tape; or for feeding directly into a digital computer.—*Fisher & Porter Co., Hatboro, Pa.*

Pyrometer, Surface

Takes spot temperatures from 100 to 2,400 F. (200I)

. . . Used for taking spot temperatures in a range from 100 to 2,400 F, the portable land surface pyrometer is accurate within 0.5%. Readings are obtained within 5 sec. after measuring head is placed on hot body.—*Fielden Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.*

Radiometer, Thermistor

Measures surface temperatures directly from a distance. (201A)

. . . If you use this new radiometer you don't need to make contact with a hot surface in order to determine its temperature. Readings can be taken from a distance merely by directing the radiometer at the desired object. It's suitable for measuring temperature of operating equipment, building walls, liquids.—*Williamson Development Co., West Concord, Mass.*

Reactor Simulator

For nuclear fledglings. (201B)

. . . Even the tell-tale ghostly blue glow of the Cerenkov effect is simulated in a model swimming-pool-type reactor. Although the reactor is only a scale model the control panel is full size and completely equipped. By watching a model operate as he manipulates the controls, a trainee can learn how to start up, to maintain, to increase and to stop an atomic chain reaction.—*Leeds & Northrup Co., Philadelphia, Pa.*

Recorder, Dust

Rapidly indicates minute amounts. (201C)

. . . A highly sensitive dust-recording instrument has been developed to give an accurate measure of dust conditions within seconds. It also provides a continuous record of dust levels. Microscope on recorder permits making a visual check of nature of dust.—*Eastman Kodak Co., Rochester 4, N. Y.*

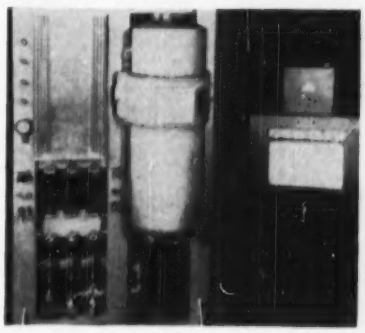
Recorder, Electronic

No special charts. (201D)

. . . Electronic receiver-recorder for d.c. type pickups and d.c. telemetering systems can combine four records on one uniformly graduated chart, records from a.c. pickups, air transmitters.—*Bailey Meter Co., Cleveland.*

Recorder, Moisture

For low concentrations of water vapor in air or gas streams. (201E)



. . . Moisture problems in air or gas pipelines are solved by a new continuous, automatic method with an instrument that records low concentrations of water vapor. Continuous monitoring by the instrument keeps gas below the critical moisture concentration where hydrates form. Principle of operation is new and based on the heat energy exchanged when a gas is adsorbed on or desorbed from the surface of a solid adsorbent. It is more adaptable to continuous measurement and recording than existing methods such as the hair hygrometer, wet and dry bulb thermometer, electrical conductivity of hygroscopic liquids and salts and others. Operating a 4-min. measuring cycle, method has been used in instruments with a full scale range of 100 ppm. water by volume. And even lower full scale ranges appear possible. Also, instruments can be made which will record higher ranges. A sensitivity of 0.25 ppm. Accuracy is limited by noise level and calibration errors to 1 ppm.—*Mine Safety Appliances Co., Pittsburgh, Pa.*

Regulator, Air

Controls small air or gas volumes. (201F)

. . . A new instrument air regulator, Type 73-26, features higher air volumes, improved corrosion resistance and a 40 micron phenolic-impregnated cellulose filter. It gives instantaneous response to flow rate changes. Adjustment is easy within close limits for any pressure within output range.—*Black, Sivalls & Bryson, Inc., Kansas City, Mo.*

Regulator, Pressure

Compact, versatile, easy operation. (201G)

. . . Featuring self-contained design, the new Model 110 pressure pilot indicates process pressure and provides direct setting of the control point on the same calibrated gage dial. This inexpensive instrument incorporates feedback proportional control or differential gap control with snap-action over a 2-100% band.—*Hammel-Dahl Co., Providence 5, R. I.*

Regulator, Pressure

Controls over wide range of temperature, pressure. (201H)

. . . Pneumatic balancing in a new single-stage gas-pressure regulator maintains controlled pressure over a wide range of inlet pressures. Efficiency equals that found previously only in multiple-stage units. Hazardous gases can be handled with greater safety because external bleed has been eliminated. — *Reaction Motors, Inc., Rockaway, N. J.*

Scale, Pulp Density

Direct reading. (202A)

. . . Pulp density scale permits direct reading of sample weight; specific gravity of liquid, dry solids and pulp; and percent solids of a pulp of a given specific gravity.—*The Mine and Smelter Supply Co., Denver, Colo.*

Snubber, Pressure

Now in stainless. (202B)

. . . A pressure snubber that protects sensitive instruments from sudden pressure changes now is being manufactured in stainless steel. Rated at 5,000 psi., the snubber offers 13 gradations of damping adjustment.—*Tube & Hose Fittings Div., Parker Appliance Co., Cleveland, Ohio.*

Switch, Magnetic Limit

No direct contact. (202C)

. . . Magnetic limit switch operated by movement of magnet located up to 3 in. away from switch. The unit eliminates the need for direct contact between moving part and switch.—*Femco, Inc., Irwin, Pa.*

Switch, Selector

For pyrometers. (202D)

. . . A new series of rotary selector switches for either thermocouple or resistance bulb circuits has been announced. Switches are double pole "shorting-type." — *Thermo Electric Co., Saddle Brook, N. J.*

Tachometer Head

Measures speeds way down and way up. (202E)

. . . Using a double-pole, double-throw switch with a capacitor for its speed-sensing element this new line of tachometer takeoff heads measures speeds in two extreme speed ranges. The low range: from ½ to 100 rpm. The high range: from 5,000 to 30,000 rpm. Claimed to have long operational life, the ruggedly constructed unit eliminates brushes, slip rings and other regularly maintained parts.—*Merton Instrument Co., Denver, Colo.*

Thermocouple

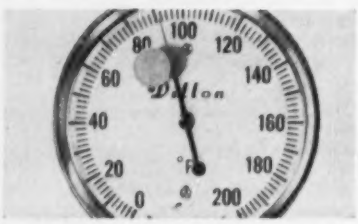
For high temperatures. (202F)

. . . Thermocouple for high temperature, high pressure service consists of silica-free ceramic tube which houses platinum purge tube and platinum-platinum rhodium couple.—*Trinity Equipment Corp., Roselle Park, N. J.*

Thermometer, Signal

Flashes variation from standard temperature. (202G)

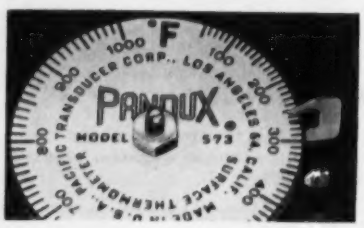
. . . For thermometer locations where actual temperature is hard to read the new Signal Eye thermometer tells the operator of a variation at a glance. The instrument can be set to signal the slightest temperature variation from a given range, and it can be reset with changes in standard operating temperature.—*W. C. Dillon & Co., Van Nuys, Calif.*



Thermometer, Surface

Has range from 50 to 1,000 F. (202H)

. . . The Spot Check surface thermometer made entirely of stainless steel is easy to read, compact and fast. It will measure ambient temperatures as well. Instrument is merely laid on the surface to be checked. Within 60 seconds, it will reach a constant, exact reading. It comes accurately calibrated within +2%.—*Pacific Transducer Corp., Los Angeles, Calif.*



Totalizer, Digital

Converts analog readings of dial scale. (202I)

. . . A totalizer converts weight readings of a dial scale to digital equivalents. It is especially suited for controlling the receiving, shipping and processing of material through an automatic hopper scale that is connected to a dial scale.—*Richardson Scale Co., Clifton, N. J.*

Transmitter, Flow

Working parts isolated from process fluid. (202J)

. . . Differential pressure is transmitted instantaneously and accurately by the new Fig. 1575 pneumatic force-balance flow transmitter. Adjustable damping built into the unit minimizes pulsation and vibration effects before they reach the transmitting section of the instrument. Unit also is stable to pipe strain, static pressure, temperature, position and random flow signal noise.—*Fischer & Porter Co., Hatboro, Pa.*

Transmitter, Temperature

Gives readings from remote location. (203A)

. . . Securing temperature readings from remote locations is no problem for the new ST-8900 remote temperature reading system. It gives accurate, temperature reading from any point where communication facilities can or do reach. Readings are obtained in a manner similar to remote gaging by the manufacturer's Telepulse system. *—Shand & Jurs Co., Berkeley, Calif.*

Transmitter, Weight

Transmits weights from scale to data handling machine. (203B)

. . . A new digital-scanning electronic unit is claimed the first to transmit weights from scale to remotely located tabulating punch cards, adding machines or similar devices. Values are converted with the normal accuracy of the original, without the electrical drift, non-linearity or friction errors that were barriers to earlier efforts.— *Toledo Scale Co., Toledo, Ohio.*

Viscometers

One fixed, the other portable. (203C)

. . . The first of two new viscometers introduced to the American market is a cone and plate instrument. It measures flow properties of simple or complex fluids simply and rapidly. Less than 0.5 ml. of sample is needed, and the thin film permits reaching a stable temperature almost instantaneously for rapid determinations. The portable instrument utilizes the coaxial cylinder principle, operating as follows: Outer cylinder rotates and the viscous drag on the inner cylinder is opposed by a calibrated spring and measured. *—Ferranti Electric, Inc., New York, N. Y.*

TECHNICAL LITERATURE

INSTRUMENTS & CONTROLS

Actuators, Valve.....Makes remote electrical operation of the final control element a reality for the first time. For information on how "EHVA" control is adapted, request your copy of Bulletin No. 200.
203D Askania Regulator Co.

Alarms, Flow, Vibration Proof.....F&P has now made it possible to produce the first flow alarm completely insensitive to vibration. For details of the numerous features, request Catalog 10-A-84 (Pub. 11514).
203E Fischer & Porter Co.

Amplifiers.....Describes Model "P" DC Amplifier—a new electronic low-voltage inear amplifier designed to increase speed & accuracy of almost all low level DC voltage measurements. Illustrated Bulletin MSP-111.1.
203F Hagan Corp.

Amplifiers.....4 p. data folder contains descriptions & schematic drawings of 4 typical applications of the new direct current amplifying instrument. Also voltage & current amplification information. Data Sheet No. 80-1.
203G Fieiden Instrument Div.

Analytical Equipment, Vacuum.....NRC Model 912 Vacuum Fusion Gas Analysis Apparatus & Model 917 Hydrogen in Titanium Determinator are standards for determining gas content of metals. Brochure A2.
352h *National Research Corp.

Analyzer-Recorders, Oxygen-Combustibles.....Provide a continuous two-in-one check of combustion efficiency by recording both oxygen & combustibles in flue gas. Product Specifications Nos. E65-1 & E12-5.
203H Bailey Meter Co.

Analyzers.....Develops a completely self-contained portable analyzer and alarm system for combustible gases. Designed for use in or near hazardous locations. Detail features in illustrated Bulletin 11-35.
203I Davis Instruments.

Analyzers, Combustible Gas.....Data sheet describes Davis Combustible Gas Analyzers with Brown ElectroniK recorders & controllers. Used for both safety & production application. Data Sheet 10.15-4b.
203J Minneapolis-Honeywell.

Analyzers Oxygen.....Brochure describes Model F3 Oxygen Analyzer. Includes operating principle, typical applications in a wide range of industries, and helpful technical data. Bulletin No. 108A.
203K Arnold O. Beckman.

Analyzers, Oxygen.....The Unitized O_2 Analyzer can help to streamline O_2-dependent processes. For pertinent information concerning this O_2 monitor, request company's detailed Folder No. ND46-91(5).
203L Leeds & Northrup Co.

Analyzers, Oxygen.....A new 16 p. fully illustrated catalog explains principle, construction and features of both the paramagnetic type Magno-Therm analyzer and the electronic recorder. Request Catalog 55-829-56.
203M Hays Corp.

Analyzers & Recorders.....Chart final yield and H_2-N_2 ratio before and after recycle gas enters feed stream. L&N Analyzers have been proven successful throughout the process industries. Folder ND46-91 (2).
203N Leeds & Northrup Co.

Annunciators.....The "VS" annunciator identifies first off-normal condition, enabling the operator to take immediate, corrective action. The "50VS" is completely flexible. Request complete literature.
203O Panellit, Inc.

Automation.....''Instrumentation'' carries case history studies of how industry applies automation techniques in everything from atomic energy, research, utility plants, heat treating of metals to chocolate processing.
203P Minneapolis-Honeywell.

Automation Equipment.....New catalog presents products & services offered by "ATC" for the field of Automaton. Covers time control equipment, valves, counters, electronic contactors, etc. See Catalog D-31 .
203Q Automatic Temp. Control.

Centigrade-Fahrenheit Conversion Tables.....Facilitates conversion between Centigrade & Fahrenheit scales, from absolute zero to 3350 C (or 6062 F) in increments of one degree. Request Note Book EN-33(1).
203R Leeds & Northrup Co.

Clutches, Air-Grip.....Bulletin offered by company on its line of air-grip clutches which gives complete technical data, sizes, and selection tables. Company makes Bulletin A634 available upon request.
203S Dodge Mfg. Co.

Comparators.....Fully illustrated, 100 p. tells how to use pH and chlorine control for water supplies, process solutions, production processes in 24 basic industries. Also covers complete line of comparators.
203T W. A. Taylor & Co.

Computers.....Information and prices are available on the line of Bendix G-15A computers. Features: faster, larger in computing capacity, smaller in size, lowest in cost and they are available now.
203U Bendix Aviation Corp.

Computers.....The Bendix G-15 is a high speed, large capacity digital computer and it is low in cost. Can be used economically in engineering, research and control functions. Request information on G-15 computers.
203V Bendiv Aviation Corp.

Conductivity Equipment, Electrolytic.....New reference lists a wide range of standard instruments and conductivity cells including the most recent developments in both bridges and cells. Catalog No. 22.
203W Industrial Instruments.

Control, Evaporator.....Company announces the availability of a literature reference covering the recommended instrumentation for multiple effect evaporators in great detail. Request copy of Data Sheet No. 10.
203X Taylor Instrument Cos.

* From advertisement, this issue.

Instruments & Controls

TECHNICAL LITERATURE

Control, Moisture—

Electromanometers

Control, Moisture.....“Moisture Control by Vi-Speed” describes the Vi-Speed improved method for removing moisture from air, hydrogen, nitrogen and natural gas lines. New model specifications, dewpoint chart, etc.
204A Van Products Co.

Control, Reactor.....Taylor has pioneered in the development of control systems for chemical reactors. Data Sheet No. 9 covers in great detail recommended instrumentation for various types of reactors.
204B Taylor Instrument Cos.

Control, Sequencing Timing.....Used in water treatment plants, chemical & food processing plants, & paper & textile mills to pace chemical feeders & other equipment. Details of systems in Data Sheet 11.12-1.
204C Minneapolis-Honeywell.

Control, Slurry Density.....Describes control of water percentage in wet process cement manufacture. Method of operation, design features, performance specifications, instrumentation, etc. Data Sheet 1.1-4.
204D Minneapolis-Honeywell.

Control Stations, Sodium Oxide..... Offers new literature item listing application, features, specifications, description & ordering directions for Sodium Oxide Control Station. Available on request Ref. No. GEA-6453.
204E General Elec. Co.

Control Systems.....Describes an economical multi-function control system —Synchro-Scan Supervisory Control. Illustrates individual components & a complete typical supervisory control system. Bulletin No. 240-M6.
204F Builders-Providence.

Control Systems.....Electronik instrumentation with Electr-O-Volt relay provides continuous throttling in saturable reactor control systems. Request your copies of Catalog 1531 & Bulletin 8420.
204G Minneapolis-Honeywell.

Control Systems.....Bulletin describes Fireye primary control System FJ-2 for light oil or gas-fired automatic commercial burners. Contains full operating data. For complete details, see Bulletin CF-21.
204H Electronics Corp. of America

Control Systems, pH.....Designed for use in any pH process application—combine in a single package all components needed for single or multiple-channel pH process monitoring, recording & controlling. Bulletin 384.
204I Beckman Instruments.

Control Systems, pH.....L&N pH Control System includes Speedomax recorder, L&N Control Unit, Valve Drive Mechanism, and pH electrode assemblies. Successful approach to waste treatment. Data Sheet 700(2).
204J Leeds & Northrup Co.

Controllability Analysis, pH.....Unique analysis gives vital data about controllability factors of individual waste treatment processes. Outlines approach in company's Process Data Sheet No. 700(2).
204K Leeds & Northrup Co.

Controllers.....Taylor makes available a data sheet discussing the separation of components in a batch distillation column in the shortest time at the lowest possible cost. Also other recommendations. Data Sheet 11.
204L Taylor Instrument Cos.

Controllers.....The new Puromatic Controller was designed to control the purity of distilled water automatically. Constantly measures the purity of distilled water before it enters storage tank. Request details.
204M Barnstead Still & Sterilizer.

Controllers, Batching.....The Foxboro batching controller solves temperature “overshot” problems. For batch operations requiring controlled rate of rise, request data on Cam-Set & Time-Cycle controllers.
204N Foxboro Co.

Controllers, Electric Proportional..... Widely used for control of dew point, pressure, temperature, etc., in batch process, combustion atmosphere & heat treating furnace applications. Details in Bulletin No. 4-11.
204O Foxboro Co..

Controllers, Humidity..... Offer many features: lowest priced electric hygrometer humidity controller; small size; automatic; no re-calibration required; easy to wire & set; etc. Details in Bulletin No. 2273.
204P American Instrument Co.

Controllers, Indicating..... Series 540 “On-off” indicating controller . . . is a rugged, durable & accurate remote indicating temperature control instrument designed for general industrial use. Bulletin No. MC122.
204Q Fenwal, Inc.

Controllers, Indicating..... Offers data on new Series 560 controller . . . with revolutionary thermistor principle of operation for kilns, ovens, furnaces, extruding, air heaters, etc. See catalog No. 500 for details.
204R Fenwal, Inc.

Controllers, Input.....Describes Wheelco Inputrol—an automatic input controller for accurately controlling input rate of electrical power as well as flow of liquid or gas to any process. Bulletin F 5726-1.
204S Barber-Colman Co.

Controllers, Liquid Level.....Model 2600 Flexotrol displacement type liquid level controllers . . . no bearings and no knife edges. Flexotrol system is direct, simple, trouble-free. Request Bulletin No. 456-1.
204T Kieley & Mueller.

Controllers, Pneumatic.....Illustrated, 4 p. covers P-4 pneumatic controllers: available modes of control; specifications for controller response adjustments; performance specifications; etc. Pub. No. 11517.
204U Fischer & Porter Co.

Controllers, Recording.....Dual temperature-humidity controls are rugged and have simplified designs. Partlow, the pioneer in mercury thermal controls, offers complete details of these controls in Condensed Catalog.
204V Partlow Corp.

Controllers, Temperature.....Completely revised product reference describes the Sarco line of Type LSI Electric Indicating Temperature Controllers. Includes a simplified operational sketch. Bulletin No. 1025B.
204W Sarco Co.

Controllers, Thermostatic Pilot.....Describes new Fultrol Thermostatic Pilot Controller No. 1100. Provides accurate control of liquids or air temperature when used in conjunction with valves, dampers, etc.
204X Fulton Sylphon Div.

Controls.....Describes wide range of Cash Standard pressure, hydraulic, temperature, process and combustion controls. Includes recommended applications, construction & operation features, etc. Bulletin S-730.
204Y A. W. Cash Co.

Controls.....Vest-pocket size . . . recording, indicating and non-indicating explosion-proof controls for use with gas, oil, steam or water valves, or with electrical equipment. —30F to 1200F ranges. Bulletins.
204Z Partlow Corp.

Controls, Air Pollution.....The Bendix-Fries Aerovane system can be a big help to you in offsetting air pollution problems. The entire system can be used in dozens of plant applications. Details are available.
204AA Fries Instrument Div.

Controls, Cooling.....Covers new self-powered T44 Cooling Control which holds temperature of cooling water in jackets or coils of equipment such as compressors, oil coolers, stills, etc. Supplement 1-Bulletin 700-A.
204BB Sarco Co.

Controls, Electro-Pneumatic..... L&N's new C.A.T. (current-adjusting type) Control features: fast electrical response; simplicity, low cost, adaptability; easy installation; etc. Details in Folder No. ND4(8).
204CC Leeds & Northrup Co.

Controls Level.....Tektor level control indicates or controls level of fluids, powder, solids (conducting or non-conducting). Features low first cost . . . low operating cost. Request informative literature.
204DD Fielden Instrument Div.

Controls, Liquid Level.....Magnetrol liquid level control models can be adapted to meet any special requirements for pressure, temperature or corrosive liquids . . . usually at little extra cost. Catalog data.
205 *Magnetrol, Inc.

Controls, Liquid Level.....Company widens its scope of liquid level measurement & control with the Fisher “Belmont Series” of capacitance type electronic liquid level controllers. Bulletin **F-100.**
204EE Fisher Governor Co.

Controls, Liquid Level.....Five-Point versatility solves processing and power plant control problems. Wide selection of ranges, pressure ratings & materials. For details on 12000 Series models, see Catalog.
204FF Mason-Neilan.

Controls, Photoelectric..... 20 p. book, “Proved Answers to Successful Automation,” offers specifications, descriptive data & operational charts of photoelectric controls for many industrial uses.
204GG Electronics Corp. of America.

Controls, Pressure.....Fireye 80H pressure controls are designed for many important industrial uses. They provide high & low limit control for steam, air & non-corrosive liquids & gases. Data in Bulletin CO-30.
204HH Electronics Corp. of America.

Controls, Pressure & Temperature..... The new Cash Standard Type 51 pressure pilot and temperature pilot . . . provides precise, dependable control of pressure and temperature. Details in Bulletin No. 978-A.
204II A. W. Cash Co.

Controls Process.....Feature the utmost in centralized recording & control efficiency. Require minimum of panel space, yet offer unsurpassed operator convenience, visual accuracy, etc. Bulletin 13-18.
204JJ Foxboro Co.

Controls, Refrigeration.....Phillips Level Eye lets you “see” level of liquids in pressure systems. Low cost, simple to install . . . for temperatures from —50° to 250°F. Request Level Eye Bulletin.
204KK H. A. Phillips & Co.

Controls, Safety.....Manufacturer of boiler water level controls, relief valves related safety devices releases valuable bulletin, “Basic Safety Controls for Hot Water Space Heating Boilers,” No. P-30.
204LL McDonnell & Miller.

Controls Sizing.....BS&B's exclusive method takes both the “guess and the work” out of controls sizing . . . for liquid, steam and gas applications. For complete information, request company's illustrated Manual.
204MM Black, Sivalls & Bryson.

Controls, Temperature.....Describes application ideas & complete performance specifications for a new remote bulb, adjustable temperature controller. Gives sizes & various modifications. Brochure MC-121.
204NN Fenwal, Inc.

1956 INVENTORY

Controls, Temperature.....Gordon "Xactline" controls temperature automatically within a fraction of a degree in any heat process. Can be used with any indicating or recording pyrometer controller. Request Bulletin XA.
210a *Claud S. Gordon Co.

Controls, Temperature.....United Electric designs units to automatically control temperatures of gases, liquids, etc. where there are explosive vapors. Request Bulletin No. 3-1 for the D98 & Bulletin No. 3-5 for the E98.
205A United Electric Controls Co.

Controls, Temperature.....Improved design remote bulb temperature controls . . . wide Range Type F56 . . . calibrated Type E13. For complete data on the remote type temperature controls, see Catalog Section 200.
205B United Elec. Controls Co.

Controls, Temperature.....Completely illustrated, 16 p. catalog presents company's line of standard local mounted temperature controls. Includes theory, features, general specifications, etc. Request Catalog Section No. 100.
205C United Elec. Controls Co.

Controls, Temperature.....Features: cuts initial control costs; costly production stoppages; control maintenance costs. Controls for gas, liquids & solids in —30° to 1200°F. ranges. Condensed Catalog CC.
205D Partlow Corp.

Controls, Temperature, Local Mounted.....Each class covers a wide variety of adjustable ranges, on-off switch differentials & other characteristics which make it adaptable for many uses. Catalog Section No. 100.
205E United Elec. Controls Co.

Controls, Valve.....Time, labor & money can be saved by opening & closing valves with LimiTorque . . . "just press the button." There's a type & size of LimiTorque for every valve operating need. Catalog L-550.
205F Philadelphia Gear Works.

Detectors, Fire.....Contains illustrations, technical data & power information about 2 new standard Fireye fire detection systems designed to protect warehouses, large storage or factory areas, etc. 7 p.
205G Electronics Corp. of America.

Detectors, Leak.....Beckman Bulletin features their new Leak Detector . . . designed expressly to detect, locate, and measure minute leaks in evacuated, pressurized or hermetically sealed equipment. Bulletin No. 17.
205H Beckman Instruments.

Detectors, Temperature.....Illustrated, 24 p. covers the complete line of 8890 Series Rayotube (heat-radiation) Detectors...for continuous temperature measurement to 5000 F. and beyond. Request Catalog EN-83.
205I Leeds & Northrup Co.

Detectors, Temperature.....The Radiamatic unit is a radiation detector used with an ElectroniK instrument to measure, indicate, record and/or control temperature. For complete information, request Catalog No. 9301.
205J Minneapolis-Honeywell.

Electromanometers.....CEC's electromanometer reads out in direct numerical form. It equals manometer-tube accuracy. For more information on pressure measurement, request a copy of Bulletin CEC 1547-X13.
205K Consolidated Electrodynamics.

* From advertisement, this issue

→ Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.



MAGNETROL

The World's Most Dependable

LIQUID LEVEL CONTROL

Because of the utter simplicity of Magnetrol's magnetic operating principle, standard models can be easily adapted to meet any special requirements for pressure, temperature or corrosive liquids . . . and usually at little extra cost. This Magnetrol versatility has solved all kinds of tough level control problems . . . and given our engineers wide application experience that can be invaluable to you.

Magnetrol is so simple that failure is all but impossible! Using only permanent, unfailing magnetic force for its operation, there's nothing to wear out . . . no diaphragms or bellows to stiffen and rupture . . . no electrodes to short or corrode . . . no packing to bind or leak. Magnetrol is practically maintenance-free! Magnetrol units are available for controlling level changes from .0025-in. to 150-ft. . . . with multi-stage switching when desired. Send coupon for full details.

MAGNETROL, Inc.

Send Coupon For Full Details

MAGNETROL, Inc., 2124 S. Marshall Blvd., Chicago 23, Illinois

Please send me catalog data and full information on Magnetrol Liquid Level Controls.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

Inquiry Code Number for This Advertisement-205

TECHNICAL LITERATURE

Excitation Units—

Meters, Liquid

Excitation Units.....Announces new catalog on the JAco Varisource for spectrochemical analysis. Made in 3 standard models, each available with up to 5 different excitation circuits. Catalog V2-56.
206A Jarrell-Ash Co.

Fractometers, Vapor.....Model P-E 154 vapor fractometer gives you Butene separation in 15 minutes. Revolutionary advance in the field of gas & volatile-liquid analysis. Request descriptive Bulletin.
206B Perkin-Elmer Corp.

Gages.....With proper application, the new Supergauge will last a lifetime. Supergauges are available in 4½" and 8½" sizes. For information on case styles, materials of construction, etc., request Publication 1819.
206C U. S. Gauge Div.

Gages.....Announces new line of small-size, easy-to-read gages & receivers. Important features: 5 in. illuminated scales; independent, interchangeable units; easily mounted; etc. Data in Bulletin V5.
206D Republic Flow Meters Co.

Gages.....For pressure, vacuum or compound service. There are no gears or teeth to wear out. Cam wiping action keeps contact points clean & smooth. Provides complete information in Gage Catalog No. G-2.
206E Helicoid Gage Div.

Gages, Filter.....Describes Bacharach filter gages for commercial & industrial ventilating & cooling systems. Includes exclusive features, operating principle & design, typical specifications, etc. Illustrated Leaflet 854.
206F Bacharach Industrial Instr.

Gages, Filter Plant.....Reference describes the various types of meters and includes facts on operation, construction, general information, sizes and capacities, specifications, etc. Request 20 p. Bulletin 1002.
206G Simplex Valve & Meter Co.

Gages, High Vacuum.....NRC's Model 520 Alphatron R Ionization Vacuum Gage is outstanding among their line of Thermocouple, Ionization, & Pirani Gages. Has 10-4 to 1000 mm. HG range. Brochure G4.
352d *National Research Corp.

Gages, Liquid Depth.....Presents comprehensive information on the operation and design of the Petrometer Series 1400 gages, as well as the method of selecting the right gage. Illustrated Bulletin 6004.
206H Liquidepth Indicators.

Gages, Liquid Level..... Completely illustrated 76 p. reference describes the entire line of Penberthy liquid level and water gages . . . and also indicates their numerous points of superiority. Request Catalog 35.
206I Penberthy Injector Co.

Gages, Liquid Level.....Gages and valves for the observation of liquids and levels. Available in stainless, monel, nickel, hastelloy and many other materials. Full information is available upon request.
209a *Jerguson Gage & Valve Co.

Gages, Liquid Level.....Presents valuable data on liquid level gages: reflex; thru vision; tubular. Standard equipment in leading refineries and industrial plants all over the world. Request complete Catalog.
206J Strahman Valves.

Gages, Mechanical Force.....New brochure full of actual "how to do it" pictures for Model X Gage. An ingenious instrument for precision measurement of pressure, tensile or torque. Bulletin 11E.
206K W. C. Dillon & Co.

Gages, Pressure.....Important data on new Switch Model Mechanical Pressure Gage. Includes details of switch arrangement & ratings, pertinent dimensions & latest price schedules. See Bulletin No. PG-4.
206L W. C. Dillon & Co.

Gages, Strain.....Baldwin-Lima-Hamilton announces the availability upon request of their new 1955 price list for SR-4 strain gages, instruments, accessories, and cements with revised quantity discounts. 12 p.
206M Baldwin-Lima-Hamilton.

Gages, Tank.....New Series 1400 Petrometer remote reading liquid depth gages are designed for convenient, rapid installation, easy, trouble-free operation, & accurate indication. Details in Bulletin No. 6004.
206N Liquidepth Indicators.

Gages, Tank.....Company makes available pertinent information on their line of 100% automatic Liquidometer tank gages for gaging liquids of all kinds. Gages are approved by the Underwriters' Laboratories.
206O Liquidometer Corp.

Gages, Thickness.....Vidigage automatic thickness gage with 21" C-R Screen for instantaneous thickness measurements between 0.005" & 2.5" & accuracies of 0.1% to 1.0%. Details in Catalog No. V-101.
208a *Branson Instruments.

Gages, Vacuum.....with 6 ranges covering pressures from 1000 mm. to 0.1 micron. Equally ideal for the laboratory & production floor. It is precisely accurate & nearly immune to abuse. For details see Bulletin G-20.
206P National Research Corp.

Gages & Valves, Liquid Level.....Covers complete product line of armored gages and valves . . . for handling hazardous or valuable liquids without fear of leakage or breakage. Request detailed General Catalog.
206Q Jerguson Gage & Valve Co.

Generators, Ultrasonic Power.....For washing and degreasing, etc., with hermetically-sealed barium-titanate Transducers—40Kc/sec. Effective cleaning areas of ¼ sq. ft. to 10 sq. ft. Request literature.
208b *Branson Instruments.

Indicators.....Makes available a convenient reference for those interested in panel and portable indicators for measurement of temperature, electrolytic conductivity and pH. For your copy, request Catalog No. ND42.
206R Leeds & Northrup Co.

Indicators, Dual Lamp.....New "model 1F" miniature indicator light has two independently wired bulbs and indicates four different conditions. Used in process control systems. Details in Data Sheet 228.
206S Eldema Corp.

Indicators, Electronic Level.....For accurate, continuous level measurement of liquids or divided solids. Feature savings in initial cost and in maintenance. Complete new instrument information available.
206T Fielden Instrument Div.

Indicators, Flow.....New ball-type flow indicator provides a dual scale for the approximate measurement of water flow in gpm and air flow in cfm. Exceptionally versatile for industrial use. Bulletin 18W.
206U Schutte & Koerting Co.

Indicators, Liquid Level.....Offers new literature item listing application, principles of operation, features & description of Liquid Level Indicators for electrical-conducting fluids. Request Ref. No. GEA-6454.
206V General Elec. Co.

Indicators, pH.....Highlights features & component parts of Universal pH Indicator which make it adaptable & accurate for pH measurements in all types of plant & laboratory conditions. Catalog No. EH22-96.
206W Leeds & Northrup Co.

Indicators, Plugging.....Offers a new literature item listing application, features, description, specifications, principle of operation & ordering directions for plugging indicators. Request Ref. No. GEA-6457.
206X General Elec. Co.

Indicators, Self-Balancing.....Describes new T-E instrument . . . a self-balancing indicator with built-in key-type or push button switches. Includes function, design, operation, etc., in Catalog No. 61-E.
206Y Thermo Elec. Co.

Indicators, Sight Flow..... Offer valuable features: inexpensive—prompt delivery; two sight-glass windows; flanged sight-glass covers; through-bolted construction; etc. Details in illustrated Pub. 11456.
206Z Fischer & Porter Co.

Indicators, Sight Flow.....Literature describes the new line of sight flow indicators . . . easily and inexpensively installed in any new or existing pipe line ½" to 2" N.P.T. Request detailed Data Unit.
206AA Jerguson Gage & Valve Co.

Indicators, Sight Glass.....Visi-Flo line offers a trustworthy visible means of alerting you as to rate of flow, viscosity, color of liquids, clarity & purity of product. Sizes, styles, details in Bulletin No. F-6.
206BB OPW Corp.

Indicators, Temperature..... Describes Thermotubes—a graded series of sealed-in-glass temperature indicators which change appearance irreversibly from white to black at predetermined temperatures. 6 p.
206CC Paper Thermometer Co.

Indicators, Temperature..... You can measure temperature of almost anything—gases, solutions or solid objects—quickly & accurately, from a distance, with new Thermo-O-Meter Model 388. Details in Form A-88.
206DD Simpson Elec. Co.

Indicators, Temperature.....Model F-1 is available with maximum visibility dial; choice of temperature ranges from minus 60° F to plus 750° F; etc. Request catalog describing line of indicators & recorders.
206EE Electric Auto-Lite Co.

Indicators, Vertical Scale.....Describes the new Honeywell Tel-O-Set vertical scale indicators. Up-to-date information on the Tel-O-Set recorders & controllers is also included. Request 12 p. illustrated Bulletin 7202.
206FF Minneapolis-Honeywell.

Information Systems.....Panalog 605 supplies management control information. Periodically logs & continuously scans. Completely flexible. Guides management in raising plant output & profit. Request data.
206GG Panellit, Inc.

Inspection, Ultrasonic.....Describes the Sperry Ultrasonic Reflectoscope . . . inspection instrument for the non-destructive detection of defects within materials. Details principle of ultrasonic inspection. Bulletin 50-105.
206HH Sperry Products.

* From advertisement, this issue.

Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 71).

Instrumentation.....Dynalog instruments can be used with resistance, voltage, capacity, or inductive type primary elements to measure &/or control any process variable with speed accuracy. Bulletin No. 343.
207A Foxboro Co.

Instrumentation.....F&P General Catalog describes product line: complete process instrumentation; data reduction & automation systems; centralized control stations; chlorination equipment; etc. Catalog No. 1.
207B Fischer & Porter Co.

Instrumentation.....Company offers bulletin on its line of automatic controlling, recording and telemetering instruments. For more complete information, request a copy of 36 p. Bulletin P1245.
207C Bristol Co.

Instrumentation, Miniature.....Whenever you're planning graphic process control, plan to take advantage of the extra values built into the latest Tel-O-Set miniature instruments. New Bulletin No. 7202.
207D Minneapolis-Honeywell.

Instrumentation of Rotary Kiln Operations.....describes improvements possible in rotary kiln operation by automatic L&N control of such variables as temperature, draft, and speed. Information in Catalog N-00-664(1).
207E Leeds & Northrup Co.

Instruments.....New 64 p. booklet, "Labaratus," lists 350 of company's manufactured and specialty instruments, including a current price list. Photographs and descriptions of new and improved products.
207F Central Scientific Co.

Instruments.....Process control instruments standardized & stocked for immediate shipment from Hatboro, Pa.; Chicago, Ill.; Houston, Tex.; & Los Angeles, Cal. described & illustrated in 24 p. Catalog No. 2.
207G Fischer & Porter Co.

Instruments.....To regulate & record—temperature, pressure, vacuum, time . . . choose mechanical instruments by Weston. Describes line, noted for long-time accuracy & dependability. Illustrated Catalog No. M2A.
207H Weston Elecl. Instrument.

Instruments, Industrial.....Marsh offers endless types, ranges and case styles of instruments. For more complete information, request a copy of the new fact-filled catalog on pressure gages and dial thermometers.
207I Marsh Instrument Co.

Instruments, Laboratory.....New 8 p. catalog describes Servall laboratory instruments, including angle centrifuges, ultra-microtomes, high-speed homogenizers, gas & moisture testers, etc. Request your copy.
207J Ivan Sorvall, Inc.

Instruments, Process.....2 p. bulletin describes specifications, ranges, dimensions & mounting of the Types HE and HJ process instruments—indicators, recorders, recording controllers. Bulletin GEC-1362A.
207K General Elec. Co.

Instruments, Process Control.....Illustrated, 8 p. Catalog describes electro-optical instruments for process control. Includes data on: OptiTherm Infrared Radiometers; OptiTherm Infrared Detectors; etc.
207L Barnes Engrg. Co.

Instruments, Test.....Illustrates & describes the entire line of Precision test instruments for industrial & radio-TV-communications service & other electrical & laboratory applications. Catalog No. 23.
207M Precision Apparatus Co.

Instruments, Testing.....New leaflet contains illustrations and brief descriptions of 21 instruments the company makes for testing paper, plastics, textiles, light metals and other materials. Leaflet P-560.
207N Thwing-Albert Instrument Co.

Integrator Systems, Multiple Flow.....Illustrated reference describes company's automatic multiple flow integrator systems. Includes data on the numerous features. Request Catalog 58-30 (Pub. 11520).
207O Fischer & Porter Co.

Load Cells.....“Packaged Precision Measurement” can help solve your problems. To obtain detailed information concerning SR-4 Device applications and instrumentation, request illustrated Catalogs.
207P Baldwin-Lima-Hamilton Corp.

Measurement & Control, Low Level.....Solutions to problems of low-level measurement & control supplied by Weston Inductronic System—an entirely different method of d-c amplification. Bulletin B-36-B.
207Q Weston Elecl. Instrument.

Measurement, Packaged Precision.....For complete and detailed information on SR-4 Device applications and instrumentation, request company's new product literature: Bulletins Nos. 4300, 4301, 4302, 4306.
207R Baldwin-Lima-Hamilton.

Measurement, Temperature.....The Alnor Pyrocon combines laboratory precision with production tool ruggedness to give you fast, accurate answers to all surface temperature problems. Request Bulletin.
207S Illinois Testing Labs.

Meter & Analyzer, Sound Level.....The M-S-A Soundscope combines the functions of sound level meter, octave band analyzer & narrow band analyzer in a single compact unit. Request Bulletin No. 0818-1.
207T Mine Safety Appliances Co.

Meters.....Illustrated, 12 p. describes line of Propelofio Meters—direct-reading, propeller type instruments for metering water & other liquids. Complete data on features & specifications. Bulletin No. 380-K4A.
207U Builders-Providence.

Meters.....The Auto-Stop batching meter shuts off automatically . . . accurately . . . leaving the operator free to devote full attention to other details. Complete data contained in Bulletin No. 566S.
207V Neptune Meter Co.

Meters.....Meters available to handle more than 150 industrial liquids. Neptune water meters reduce the costs of pumping, purifying, softening & distributing water. For complete details, request Bulletin No. 566X.
207W Neptune Meter Co.

Meters.....Fully describes company's new line of all-ferrous Rotocycle meters . . . designed for metering low pressure liquid fertilizers such as aqueous ammonia and ammonium phosphate. Bulletin No. O.G. 408.
207X Rockwell Mfg. Co.

Meters.....Type 316 stainless steel meter for corrosive liquids . . . is answer to many measurement problems in food, chemical, drug & industrial processing fields—it resists corrosion. Bulletin No. OG-406.
207Y Rockwell Mfg. Co.

Meters.....XACTO meters are easily adapted with choice of dials & controls for changing needs to speed liquid handling operations & provide accurate accounting. Request descriptive product information.
207Z Bowser, Inc.

Meters.....Describes the Alnor Velometer—a precision-built, self-contained, portable instrument which gives instant, accurate readings of air velocities anywhere. Full details in Bulletin No. 2448-G.
207AA Illinois Testing Labs.

Meters, Displacement.....Niagara Meters measure volumetrically. Accurate measurement prevents waste and loss. Liquid formulas can be processed with accuracy insuring greater uniformity of product. Request details.
207BB Buffalo Meter Co.

Meters, Electricontact.....Now—explosion-proof—a new Niagara electricontact meter . . . for automatically measuring and controlling liquids in hazardous atmospheres. Complete details in Bulletin No. 35.
207CC Buffalo Meter Co.

Meters, Feeders & Controls.....Describes company's extremely varied line of equipment for metering, for chemical feeding and proportioning, and for controlling processes and operations. Bulletin No. B-I-F 5.
207DD B-I-F Industries.

Meters, Flow.....Illustrated description of all features of electronic flow meter, including diagrams explaining construction & operation, transmission system, receiver, etc. See Publication No. 55-1074-222.
207EE Hays Corp.

Meters, Flow.....Hays Veriflow meter accurately measures, indicates and totals flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates or gage sticks. See Pub. No. 53-766-38.
207FF Hays Corp.

Meters, Flow.....Describes F&P turbine flow meter—for precise flow rate measurement up to 100,000 pph at specific gravity 1.0 at ranges as high as 20:1—Details in 4 p. illustrated Catalog 10-C-20 (Pub. 11392).
207GG Fischer & Porter Co.

Meters, Flow.....Measure rate of flow of almost any material that can be pumped thru a pipe—with no obstructions or moving parts of any kind within the pipe system. Full data in Catalog 10-C-30 (Pub. 11515).
207HH Fischer & Porter Co.

Meters, Flow.....F&P 1700 series flowrator meters have rugged enclosure, one basic design, built-in mounting, maximum corrosion resistance, readily available, etc. Details available in Catalog 10-A-25.
207II Fischer & Porter Co.

Meters, Flow.....Brown flow meters assure you the utmost in measurement, integration, control and service, etc. “Flow Meters, Indicating, Recording, Integrating, Controlling.” Details in Catalog 2221.
207JJ Minneapolis-Honeywell.

Meters, Flow.....Feature simple design with only three moving parts—no breakdown due to complicated gears and mechanism. Indicate flow within 3% absolute accuracy, even with pulsating flow. Detailed Bulletin.
207 KK Henszey Co.

Meters, Flow.....This vane-type flowmeter is designed for a constant pressure drop across the meter and may be used for indicating, controlling, signal alarm, and similar applications. Request full details.
207LL Scully-Jones & Co.

Meters, Flow, Magnetic.....Offers new literature item listing application, features, description, operation & specifications of meters for flow measurements of Molten Metal. Request Ref. No. GEA-6360.
207MM General Elec. Co.

Meters, Flow, Open Channel.....Measurement of flow of liquids with suspended solids for water supply and waste treatment applications in chemical process plants is discussed in 12 p. illustrated Bulletin M22-5.
207NN Bailey Meter Co.

Meters, Fluid.....New bulletin describes Fluidometer automatic metering system for batching light or heavy liquids. Installations of direct control, remote control, dual valve & multi-valve systems shown. Bul. FL-56.
207OO Hetherington & Berner.

Meters, Liquid.....Improve quality control with meter-printed batch tickets. Control pumps, valves, etc. with auto-switch meters. You can measure faster with Neptune disc-type liquid meters. Bulletin 567A.
207PP Neptune Meter Co.

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THICKNESS GAGE



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Instruments & Controls

TECHNICAL LITERATURE

Meters, Mercury Vapor— Recorders, Temperature

Meters, Mercury Vapor.....Folder is available describing line of mercury vapor meters for detecting toxic concentrations of mercury vapor in plant and laboratory atmospheres. Includes features and operation.
208A Harold Kruger Instruments.

Meters, Millisecond.....Describes the Model 25E Chronotest Millisecond Meter . . . for measurement & direct indication of short time intervals in the milli-second region with high accuracy, convenience & versatility.
208B Herman H. Sticht Co.

Meters, Moisture.....Reference describes the new Rogers Moisture-Controller . . . the first continuous, automatic moisture meter which measures, indicates, records & controls. Covers operation & specifications.
208C Quaker Oats Co.

Meters, pH.....Describes Photovolt line-operated electronic pH meter Model 110—a dependable, electronic instrument of high accuracy for universal application in laboratory & factory. Request Bulletin 105.
208D Photovolt Corp.

Meters, pH.....Self-contained, compact, light but sturdy in design. Model 125 is suited not only for the laboratory but also for plant and field use. Complete information on features in Bulletin No. 118.
208E Photovolt Corp.

Meters, Positive Displacement..... For measuring gas from 4,000 cfh to a million, you can trust the qualities of R-C Positive Displacement meters. R-C "plur-ability" pays dividends. Details in Bulletin No. M-152.
208F Roots-Connersville Blower.

Meters, Pump.....This meter pumps a wide variety of fluids over any period of time at low cost. High efficiency & low maintenance features are found in this new Hills-McCannameter. See Bulletin No. 300.
208G Hills-McCanna Co.

Meters, Purge..... Describes complete line of "Brooks-Mite" & "Sho-Rate" purge meters for convenient, dependable small flow indication. Includes application data, design details, etc. Bulletin No. 120.
208H Brooks Rotameter Co.

Meters, Purge.....Armored purge meter has been designed as a rugged, low-cost meter for purge fluids in refinery & other high pressure purge applications. Data & specifications in Catalog 10-A-45 (Pub. 11513).
208I Fischer & Porter Co.

Meters, Stainless Steel.....Now available . . . a meter with automatic preset meter shut-off without shock. All stainless construction, these meters can be used for positive liquid accounting. Bulletins.
208J Rockwell Mfg. Co.

Meters, Turbidity Recording..... Bulletin describes features, application, calibration, installation, & operation of the recording turbidimeter. For details on this analytical process instrument, see Bulletin GEC-1203A.
208K General Elec. Co.

Monitors.....New model height-of-fill monitor, an x-ray device that automatically monitors under- and over-fills of sealed opaque containers on a conveyor line. Request descriptive lit., Pub. 8A-3441A.
208L General Elec. Co.

Monochromators.....The Model 220 Vacuum Ultra-Violet Scanning Monochromator is designed to produce a maximum of work results with a minimum of operator effort. Illustrated Booklet.
208M Paul M. McPherson.

Mueller Bridges.....Describes use of the precise Mueller Bridge as a laboratory standard of temperature measurement from —190 C to +500 C, with a limit of error of only 0.01 C. Details in Catalog EF22-33(1).
208N Leeds & Northrup Co.

Photometers, Flame.....Furnishes information on the Model 41 Direct-Reading Flame Photometer . . . a new instrument for sodium and potassium determinations in clinical and industrial laboratories. Bulletin No. 396.
208O Beckman Instruments.

Pilots, Control.....Leslie floatless level control pilots sense changes in liquid level that will help you maintain peak output. In addition, you save on maintenance costs. Details contained in Bulletin 5303.
208P Leslie Co.

Poidometers.....Schaffer Poidometers combine high speed and precision in performing various scaling functions. They are built for easy operation and sustained, economical service. For details, see Catalog No. 15.
212 *Schaffer Poidometer Co.

Positioners, Power.....Hagan units offer: high precision, low maintenance, uncomplicated design and strong construction. For full data on these "Muscles for Industry," request Specification File TP-MFI.
208Q Hagan Corp.

Positioners, Valve.....Describes Wheelco Throttltrol—an automatic valve positioner for use in conjunction with any control instrument having a "high" & "low" contact with a neutral position. Bulletin F-5991-1.
208R Barber-Colman Co.

Positioners, Valve.....The Type C Vernier Valvactor is the simplest mechanical design of any valve positioner. It offers unique flexibility, super response, extra speed & positive positioning. Request details.
208S Foxboro Co.

Potentiometers.....Issues a new reference describing the Wheelco Portable Potentiometer . . . a highly accurate precision instrument. Includes information on the many valuable features. Illustrated Bulletin F-5760-1.
208T Barber-Colman Co.

Potentiometers.....Provides complete information on single, double & triple range portable potentiometers. Lists instrument features & tabulates characteristics of each potentiometer. Data Sheet No. E-51(2).
208U Leeds & Northrup Co.

Potentiometers, Null-Balance.....From simplest indicator to most complete standard controller—every Speedomax H combines compactness with "big instrument" performance. Details of features in Die-Out ND46(1).
208V Leeds & Northrup Co.

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1956 INVENTORY

Potentiometers, Transmitting.....Measure & control thermocouple temperatures or the signal from such devices as pH amplifiers, gas analyzers, etc. High accuracy in process temperatures control. Bulletin MTT810.
209A Manning, Maxwell & Moore.

Potentiometers, Wenner.....Details the application of the Wenner principle, for highly precise measurements of d-c potentials, to the thermocouple potentiometer and the standardizing potentiometer. Catalog EH22(2).
209B Leeds & Northrup Co.

Pyrometers.....Gordon "Xactemp" hand pyrometer is a quality-built, convenient instrument for quick, accurate temperature reading in molten nonferrous metals. For more complete infromation request Bulletin XT.
210b *Claud S. Gordon Co.

Pyrometers, Millivoltmeter.....Describes Protect-O-Vane Excess Temperature Cut-Off (Type No. 105). Non-recording instrument. Combines high-resistance measuring system with vane type electric control. Catalog No. 1052.
209C Minneapolis-Honeywell.

Pyrometers & Thermometers.....Describes features, accessories, application, specifications & special calibration of Type HP instruments for temperature indication & control of industrial processes. Bul. GEC-1342A.
209D General Elec. Co.

Radiation.....Illustrated, 34 p. book, "High Voltage Electron-Beam Processing," is an authoritative survey of radiation machines & their application in chemical processing, sterilization & research. Bulletin E.
209E High Voltage Engrg. Corp.

Radiography, Gamma.....12 p. presents basic data required for setting up & operating a gamma-radiography installation; tells how to select proper radioisotope; covers principles of radiation safety. Illustrated.
209F Technical Operations.

Receivers, Metagraphic.....Features a new degree of performing, flexibility, & ease of servicing in a pneumatic receiver. Bristol's line gives you 35 models to choose from. Request detailed Bulletin.
209G Bristol Co.

Recorders.....Three catalog sections discuss recording equipment—recorders, accessories & attachments, charts & writing system supplies. For further details request Catalog Sections 38-56, 80-56, 90-56.
209H Esterlin-Angus Co.

Recorders.....New microammeter millivoltmeter recorder operates on force-balance principle, gives high-speed recording, records on 3" continuous strip chart or IBM-type card chart. Bulletin MG10.
209I Manning, Maxwell & Moore.

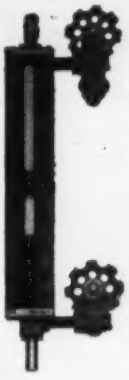
Recorders.....Offer valuable features: pre-calibrated plug-in receiver units; up to 4 pneumatic or electronic receivers—or 2 receivers & 2 integrators; etc. Products Spec. E12-5 & actual chart sample on request.
209J Bailey Meter Co.

Recorders, Multi-Point.....Feature simplified design, circuitry and construction. The chart mechanism is rugged, but so simple in form that there is little or no maintenance. Request descriptive Bulletin.
209K Fielden Instrument Div.

Recorders, Potentiometer.....Due to demand for a truly portable indicating recorder, company redesigns standard recorder without sacrificing accuracy, sensitivity or durability. Request Catalog Section 60-100.
209L Thermo Elec. Co.

Recorders, Temperature.....It is easy to record temperatures and other D. C. signals on one chart with T-E's new AutoRef Cold Junction Unit. Cold-end compensation for thermocouple circuits. See Bulletin 80.
209M Thermo Electric Co.

* From advertisement, this issue.


No. 25-R-20 gage, side connected with No. 66 valves (offset inside)


Large Chamber Gage, Reflex Type


Welding Pad Gages, staggered for continuous visibility


GA Instrument Piping Valve saves connections


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Welding Pad Gages. For use where gage must be integral part of vessel; staggered for continuous visibility; also made in circular sight glass model.

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Heated and Cooled Gages and Valves. (illustrated: Internal Tube, Reflex, Heated-Cooled Gage; No. 93 Jacketed Valve). Complete line of heated and cooled gages and valves, in various models, both Reflex and Transparent.

Non-Frosting Gages. (Patented Flat Glass model, Reflex type, illustrated). Effective frost preventing gages in both internal and external tube models.

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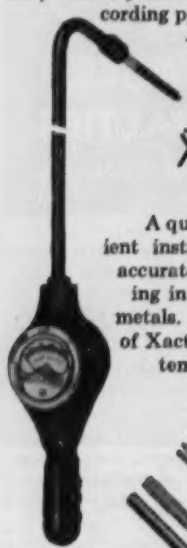
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Instruments & Controls

TECHNICAL LITERATURE

Recorders, Temperature— Testers, Thickness

Recorders, Temperature.....Newly designed Model "1000" Auto-Lite recorder gives permanent proof of temperature behavior. Request valuable catalog describing the many styles of recorders and indicators.
210A Electric Auto-Lite Co.

Recorders, Temperature, Resistance..... Fielden Resistance Temperature Recorder features: convenient AC operation; simplified unitized design; etc. Makes available complete data on instrumentation.
210B Fielden Instrument Div.

Recording Systems, Oscillographic..... From lathe cutting forces to telemetered aircraft data . . . Sanborn oscillographic recording systems prove their versatility. Catalog & technical data on request.
210C Sanborn Co.

Refractometers.....The Barnes Differential Refractometer features a sealed optical system, photocell detection, temperature compensation & a null balancing system for maximum accuracy. Request details.
210D Barnes Engrg. Co.

Regulators.....Describes Stabiline automatic voltage regulators (Type IE instantaneous electronic—Type EM electro mechanical) for increased efficiency, peak performance & lower costs. Bulletin No. S-351.
210E Superior Elec. Co.

Regulators, Jet-Pipe.....Rugged construction, dependability, long life, accuracy, speed, inexpensive maintenance, freedom for use anywhere. For full details, send today for Bulletin No. 139 and 155.
210F American Hard Rubber Co.

Regulators, Jet Pipe.....The simplest accurate long-life solution to any regulator problem. For further information on type of regulator control which best fits your operation, refer to Bulletin No. 139.
210G Askania Regulator Co.

Regulators, Pressure.....Announces development of a new hot air shutoff and pressure regulating valve . . . to control a jet engine anti-icing system plus numerous other applications. Complete product Brochure.
210H Hydro-Aire, Inc.

Regulators, Pressure.....Offers positive, accurate pressure reduction in a range from 1 to 100 pounds. The Davis No. 13 is ideal for control of unit heaters, steam kettles, vulcanizers, presses, etc. Catalog 200.
210I Davis Regulator Co.

Regulators, Pressure, Self-Contained..... Series 95 self-contained regulators are simple and sturdy and are suitable for steam, air, gas, oil, water and other fluids. For further information, see Bulletin C-95.
210J Fisher Governor Co.

Regulators, Temperature.....Duo-matic regulator for controlling steam flow in a single unit, with a single internal pilot valve—controls automatically both temperature & pressure conditions. Bulletin 5307.
210K Leslie Co.

Regulators, Temperature.....Describes No. 999 Temperature Regulator—for accurate control of industrial process, temperatures, storage water heaters, bottle washers, slashers, etc. Sizes 1" to 4" inclusive.
210L Fulton Sylphon Div.

Regulators, Temperature.....The Fulton Sylphon No. 999-T temperature regulator provides the accuracy and simplicity that mean lower processing and maintenance costs. Request Catalog D-NC.
210M Fulton Sylphon Div.

Regulators, Temperature.....Automatic regulators are self-contained & operated by liquid expansion—no outside power is needed. For temperature ranges between 0° & 300°F, pressures to 175 psi. Bulletin 600.
210N Sarco Co.

Regulators, Unit.....Entirely self-contained for automatic control of flow, pressure, proportioning and other variables. Versatile, accurate, dependable, designed to give long efficient service. Bulletin 155.
210O Askania Regulator Co.

Rotameters.....New 12 p. bulletin contains photographs and cutaway drawings of complete line of Brooks Armored Rotameters. Also describes & illustrates available Rotameter Extensions. Bul. No. 130.
210P ..Brooks Rotameter Co.

Rotameters.....New reference includes outline & cross-section drawings of Series 18200 Safeguard Rotameter constructions & includes front & rear panel mounting dimensions. Data & features in Bulletin 18-RG-A.
210Q Schutte & Koerting Co.

Scanning & Logging Systems.....Fully illustrated, 14 p. brochure describes the Taylor "Trans Scan Log" control system. Permits quick identification, evaluation & correction of any process change. Bulletin 98268.
210R Taylor Instruments Cos.

Snubbers.....Stops noise from intake & exhaust of air, etc. & stops pulsation caused by line surges from compressors, pumps, & blowers. Company makes available literature on its line of pulsation snubbers.
210S Burgess-Manning Co.

Spectrographs.....New model 3-Meter Concave Grating Spectrograph provides wavelength coverage in a single exposure which is double that of previous models. Operating details & specifications in Bulletin 52.
210T Baird Associates.

Spectrographs, Vacuum.....Detailed Catalog describes the Hilger Vacuum Spectrograph . . . for emission and absorption spectroscopy at wave lengths shorter than the transmission limit of the atmosphere.
210U Jarrell-Ash Co.

Spectrometers.....Now — two process-monitoring mass spectrometers . . . for monitoring & controlling streams to mass 80 — for higher resolving power & readings to mass 150. Request Bulletin CEC 1824A-X28.
210V Consolidated Electrodynamics.

Spectrometers, Mass.....Types 21-610 & 21-620 are exceptionally versatile, provide stream-composition information on the spot for regulating plant start-up procedures, etc. Flexible & simplified. Bul. CEC 1824B-X2.
210W Consolidated Electrodynamics.

Spectrometers, Mass.....For fundamental petroleum and petrochemical research for process development and for control, investigate the 21-103C. Complete and detailed information in Brochure No. CEC 1800C-X18.
210X Consolidated Electrodynamics.

Spectrophotometer Flow Charts..... Depict accessories used with DU spectrophotometers. Includes attachments, sample compartments, thermospacers & common spare parts arranged to show interrelationships.
210Y Will Corp.

→ Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

1956 INVENTORY

Spectrophotometers.....For instruments that are flexible, accurate & have a high degree of reliability—specify Cary. Outline of Cary spectrophotometers & description of other instruments in Bulletin AS-1.
211A Applied Physics Corp.

Spectrophotometers..... Versatile and accurate, the G-E spectrophotometer has a range of 380 to 700 millimicrons. Instrument will measure both transparent and opaque samplings. Data in Bulletin No. GEC-307.
211B General Electric Co.

Spectrophotometers.....Announces the availability of a 12 p. fully illustrated brochure on the Ratio-Recording DK-2 Spectrophotometer with curves, performance characteristics, etc. Request Bulletin No. 377.
211C Beckman Instruments.

Spectrophotometers, Recording.....8 p. bulletin contains features, specifications, applications, operation and bibliography on the sensitive color measuring instrument. Request Bulletin GEC-307B.
211D General Elec. Co.

Standard Conversion Tables.....Gives thermocouple temperature-millivolt equivalent. Temperatures expressed on Int'l Temperature Scale of 1948, electromotive force expressed in absolute units. Bulletin F7255.
211E Barber-Colman Co.

Telemetering, Logging & Reporting Systems.....Covers telemetering, logging & reporting system adapted to metering of remote points & logging of telemetered data at a central control point. Bulletin No. 535.
211F Norwood Controls Unit.

Telemetering Systems, Supervisory Control.....A simplified method of multiplexing channels of information over 2 wires. Describes features, system operation, advantages, etc. Request Catalog 50-20 (Pub. 11516).
211G Fischer & Porter Co.

Telephone Systems, Business.....How Glens Falls Insurance Company uses an internal, company-owned telephone system to economically reduce paperwork & speed operations is described in illustrated Report No. 108.
211H Automatic Elec. Sales Corp.

Telescopes, Industrial.....A.C.M.I. Borescopes permit close-up visual examination of interior areas & surfaces not otherwise visible. They save time & money & prevent costly dismantling. Request Booklet.
211I American Cystoscope Makers.

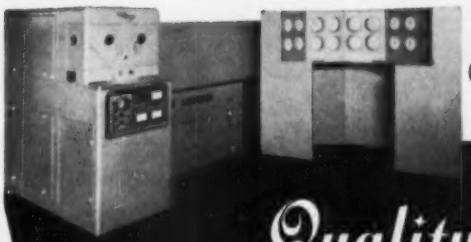
Temperature Conversion Tables.....Two-color charts not only convert degrees Fahrenheit to Centrigrade or vice versa from —400 to +4000 degrees, but also show temperature ranges of various sensing elements.
211J Thermo Elec. Co.

Test Equipment.....Describes instruments for servicing TV, radio & other communications equipment, as well as all industrial electronic and electrical equipment. Request fully illustrated, 16 p. Catalog R36A.
211K Weston Elecl. Instrument.

Test Equipment, Environmental..... Newly published booklet, "How To Save Thousands of Dollars . . ." illustrates and describes many types of environmental test equipment. Performance and operating data.
211L Murphy & Miller.

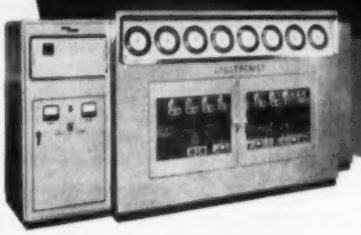
Testers, Magnetic Thickness.....Descriptive literature covers Coatingage portable coating-thickness testers. For gaging non-magnetic coatings on magnetic bases. Request Catalog C-161.
208c *Branson Instruments.

Testers, Thickness.....Describes portable, battery-operated instruments for measuring thickness of a wide variety of metals, glass, rigid plastics, etc.; nondestructively from one side of work. Catalog A2.
208d *Branson Instruments.



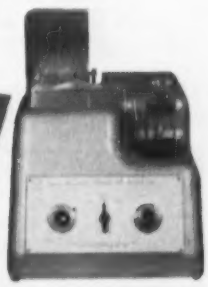
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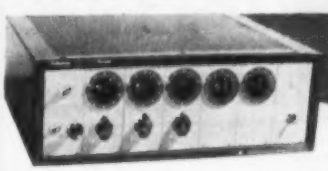
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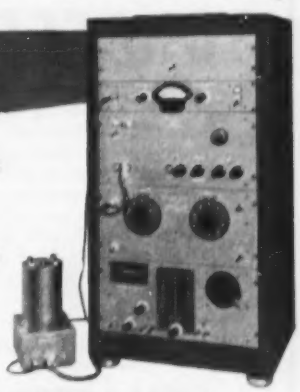


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Thermocouples—

Wire, Thermocouple & Extension

Thermocouples.....Compact, self-contained Conax Pressure Sealing Spring Loaded Thermocouples insure positive contact and fast response for thermal conductivity. For full details, request Bulletin 55-SL.
212A Conax Corp.

Thermocouples.....T-E's new "Ceramo" thermocouples will be used to check reactor temperatures on atomic sub "Seawolf." More information on these new metal-clad, ceramic-insulated thermocouples in Bulletin 31-300-E.
212B Thermo Electric Co

Thermometers.....Fully describes Circular Case Thermometers and Hygrometers (Type No. 612). Actuation—for relative humidity: hair hygrometer; for temperature: mercury-filled thermal system. Bulletin No. 6504.
212C Minneapolis-Honeywell.

Thermometers.....Features: can be installed anywhere; Maxivision dial guarantees accurate reading, & bimetal actuation insures high sensitivity, economy & surety of operation.
212D Manning, Maxwell & Moore.

Thermometers.....Rugged . . . Accurate . . . Convenient for laboratory and equipment needs. Weston all-metal thermometers are more convenient to use and far more economical. For the complete story, see Bulletin T-13.
212E Weston Elecl. Instrument.

Thermostats, Electric.....Revised reference describes electric room thermostats for factories and institutions. Also features immersion thermostats for hot water heating systems, etc. Request Bulletin No. 1000B.
212F Sarco Co.

Timers.....“Atcotrol” with dial setting incorporates high accuracy, compactness, flexibility & low cost for timing & sequencing of electrical load circuits on machinery & process operations. Bulletin No. N-140.
212G Automatic Temp. Control.

Transmitters.....The same Tel-O-Set transmitter can be used for temperature, absolute pressure or gage pressure . . . in all ranges. For complete information on features, request Bulletin No. 7280.
212H Minneapolis-Honeywell.

Transmitters.....The Tel-O-Set Transmitter is a device for measuring either temperature, gage pressure, or absolute pressure. Bulletin lists complete specifications. Request Specification 1003-1.
212I Minneapolis-Honeywell.

Transmitters, d/p Cell.....Simplicity is attained with the Foxboro type 13LA transmitter. Low in initial cost, little maintenance & easily converted in field for measurement of fluid flow. Bulletin 13-82.
212J Foxboro Co.

Transmitters, d/p Cell.....Pioneered by Foxboro seven years ago . . . the d/p Cell Transmitter established a new standard of performance in flow measurement and control. Describes design features in Bulletin 13-11.
212K Foxboro Co.

Transmitters, Force-Balance..... Describes Fischer & Porter's new Force-Balance Transmitter. Includes the numerous features, principles of operation, specifications, etc., in Catalog 50-30 (Pub. 11521).
212L Fischer & Porter Co.

Transmitters, H/P Differential Pressure.....Fully illustrated & diagrammed. 8 p. describes the principle of operation and gives dimensions, performance data & design specifications. Request Bulletin No. 1102.
212M Moore Products Co.

Transmitters, Pneumatic.....36 p. reference covers transmitters for measuring flow, pressure, level or density. Describes & illustrates 22 different models, gives hook-ups, ranges, performance data. Data Book 1004.
212N Republic Flow Meters Co.

Transmitters, Pneumatic Pressure..... The Series 1250 Ashcroft pneumatic pressure transmitter is available with pressure sensing elements in all standard pressure ranges & Bourdon tube materials. Bulletin 340.
212O Manning, Maxwell & Moore.

Transmitters, Potentiometer.....Adaptable for the measurement of a wide variety of variables, & can be quickly modified for use with different electrical primary elements. Request Bulletin No. 98262.
212P Taylor Instruments Cos.

Transmitters, Power.....Unequalled for repeated start-stop machine operation. Use of transmitters makes it possible to simplify machines, reduce costs, improve operation, etc. Details in Bulletin No. CE-3303.
212Q Diehl Mfg. Co.

Transmitters, Pressure.....Offers new literature item listing application, features, description, operation, specifications, dimensions & ordering directions for pressure transmitters. Request Ref. No. GEA-6455.
212R General Elec. Co.

Transmitters, Temperature & Pressure.....Transaire Temperature, Pressure & Differential Pressure Transmitters have created new standards in measurement of dynamic temperatures & pressures. Bulletin 98097.
212S Taylor Instrument Cos.

Transometers.....6 p. bulletin describes the applications for, and the features of, the Askania Transometer which comprises a positive displacement type flow meter & a pneumatic signal transmitter. Bul. 301.
212T Askania Regulator Co.

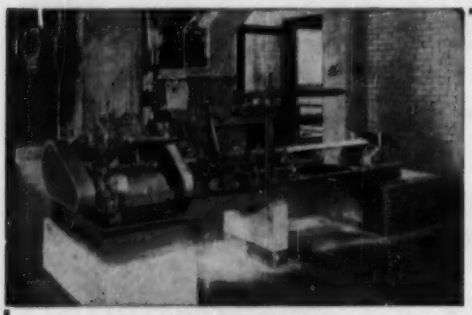
Tubes, Pitot Flow.....Reduce meter head loss where it counts . . . at the pipe line. Feature compactness and economy. For complete information on the numerous advantages, request illustrated Bulletin No. 115-L1.
212U B. I. F. Industries.

Valve Actuators, Electro-Hydraulic..... Here is an electronic controller which is electrical all the way . . . to the final element. New reference gives complete details. Request your copy of Bulletin No. 200.
212V Askania Regulator Co.

Viscometers.....The new eight-speed Brookfield viscometer measures viscosity of any fluid. A full line of accesories makes the Brookfield adaptable to any viscosity measurement problem. Request information.
212W Brookfield Engrg. Labs.

Wire, Thermocouple..... **“Serv-rite”** thermocouple wire and extension wire assure consistent quality. All standard wire and insulations are carried in stock; others manufactured to specifications. Bulletin 1200.
210e *Claud S. Gordon Co.

Wire, Thermocouple & Extension..... Company offers 8 p. Wire Bulletin describing insulations, gages, & calibration symbols, color codes, insulation characteristics, resistances, weights, etc. Bulletin 31-E.
212X Thermo Electric Co.



One of five Poidometers weighing and feeding Granulated Alum; also Activated Carbon at Minneapolis Filtration Plants.

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Borescope

Peers into large cavities to inspect without dismantling (213A)

. . . This optical instrument permits inspection of fabricated assemblies both during manufacture and in service. Expensive dismantling costs are avoided when rivets, cracks, internal corrosion and other defects must be examined. Ranging in size from ¼ in. to ¾ in. in diameter and 20 in. to 72 ft. in length, borescopes see into a wide variety of cavities such as cylinders, tubes, etc.—*Kollmorfen Optical Corp., New York, N. Y.*

Cleaner, Pipe

Sand scours pipe interior clean. (213B)

. . . Much pipe that normally is discarded can be reclaimed with this new sand blasting tool. It is said to be the first successful application of the sandblasting principle for cleaning the I.D. of pipes and tubes. Torno-Blast Sandstorm pipe cleaning system whirls sand or other abrasive material under great pressure inside the pipe.—*J. C. Fennelly Co., San Francisco, Calif.*

Cleaning Tool

For blast cleaning. (213C)

. . . Educt-O-Matic self-contained abrasive cleaning tool is no longer than a small vacuum cleaner, can be used inside tanks, on ceilings, floors, cleaning before and after welding.—*Clementina Ltd., San Francisco, Calif.*

Clothes, Resistant

Impressive durability. (213D)

. . . After 15 months in service, 14 acid-resistant Dynel uniforms issued by Stauffer Chemical at its Brooklyn plant were still usable. Average life of old-style garments was 2 months under exposure to tartaric and sulfuric acids.—*Wynko Mfg. Co., White Plains, N. Y.*

Control, Expander

Assures uniform expansion of tubes into sheets. (213E)

. . . Designed for use with any standard tapping motor, a new electric control assures the same expansion of each tube after metal-to-metal contact regardless of small variations in size of tube and tube sheets. Included in the control is a unique and exclusive voltage balancer which eliminates the need for a voltage regulator. The operator balances voltage, then sets torque control.—*Lagonda Div., Elliott Co., Springfield, Ohio.*

Covers, Valve

Warns of leaks. (213F)

. . . The new Spray-Stop valve and flange covers protect workers and equipment, giving warning of a leak. Struck by leaking chemicals, the Spray-Stop undergoes a vivid color change. Color-changing agent is not affected by fumes.—*Neirad Industries, Inc., Darien, Conn.*

Drive, Tube Expander

New features improve control. (213G)

. . . The Torq-Air-Matic, an all-air-driven tube expander drive, offers control free from the effect of operating variables, maintenance problems. Torque output is calibrated in ft.-lb. rather than arbitrary unit of measurement. Device produces 14 ft.-lb. of torque at 90 psi. with 12 cfm. maximum air consumption.—*Thomas C. Wilson, Inc., Long Island City, N. Y.*

Gasket, Resistant

Stands oil and heat. (213H)

. . . Developed primarily for the oil and chemical processing industries, 662 gasketing material has been approved by Underwriters' Laboratories for utilization in equipment where harmful liquids are encountered.—*Garloc Packing Co., Palmyra, N. Y.*

Lubricator, Die

For pipe dies. (213I)

. . . The new portable Ridgoilr solves the problem of flooding the die with cutting oil while threading pipe with hand die stocks either manually or with power. More than 95% of the oil is thus saved and can be reused repeatedly.—*The Ridge Tool Co., Elyria, Ohio.*

Lubricator, Extension

Simplifies packing of pump shaft stuffing boxes. (213J)

. . . An extension lubricator for injecting lubricant as packing in pump shaft stuffing boxes was previously made up by this manufacturer only for individual customers on request. Now it is a stock item to meet the heavy demand from pump users.—*Rockwell Mfg. Co., Pittsburgh, Pa.*

Pipe Tool

Pipe clamp and patch beats thumb in leak. (213K)

. . . Accurately shaped steel patches with neoprene or asbestos gaskets are clamped into skin-tight seals directly over pipe breaks to repair leaks. Flow through pipe need not be cut off to accomplish the repair. Claimed to seal leaks up to 6,000 psi., the patch can be welded for permanence at a convenient time.—*Atlas Industries, Inc., Houston, Tex.*

Projector, Gamma Ray

For weld inspection. **(214A)**

. . . A portable gamma-ray projector that boasts decided advantages over conventional x-ray equipment is available for radiography work. It is extremely safe to operate, costs only a fraction as much as comparable x-ray equipment, is extremely portable, needs no electricity, no control board, no maintenance beyond replenishment of the radio-isotope, and can take a picture over 360 deg.—*Metal & Thermit, New York, N. Y.*

Radiography Unit

Fully portable. **(214B)**

. . . Designed for rapid inspection of welds and pipelines, the MG 260H X-ray radiography unit is sufficiently compact to fit into the trunk of an automobile. X-ray tube and high tension generator are completely enclosed in one unit.—*North American Philips Co., Mt. Vernon, N. Y.*

Rope, Fiber

Scorns extreme temperatures. **(214C)**

. . . Fiberfrax ceramic fiber has been spun into a lightweight, resilient rope that resists heat as high as 2,300 F. An aluminum silicate material, 30 ft. of ½ in. dia. weighs in at one pound—50% lighter than the other top heat-resistant rope, asbestos.—*Carborundum Co., Niagara Falls, N. Y.*

Scanner, Microfilm

Handy and speedy, fits into pocket. **(214D)**

. . . A midget model microfilm scanner is designed for rapid reading of aperture cards either in jackets or unmounted. Sections of engineering drawings can be studied closely with it. Cards are simply slipped into the slot under the optical lens and viewed against a white background in the ordinary light.—*Filmsort Div., Dexter Folder Co., Pearl River, N. Y.*

Spreader, Absorbent

Three times faster than hand spreading. **(214E)**

. . . Oil and grease absorbents can be spread evenly and efficiently on all types of floors by a new multi-purpose cart. An easily accessible lever allows fingertip adjustment of distribution rate. Total capacity: 50 lb.—*Waverly Petroleum Products Co., Philadelphia, Pa.*

Welding Ring

Improve arc-welded surfaces. **(214F)**

. . . Use of these insert rings offers various advantages to inert-gas tungsten arc welding operations. On piping of over ¼-in. wall thickness the rings assist in obtaining uniform root-pass welds. On thin wall piping they improve the weld contour.—*Grinnell Co., Providence, R. I.*

TECHNICAL LITERATURE

MAINTENANCE TOOLS & SUPPLIES

Air, Water & Industry.....“Air, Water & Industry—Some Compressed Air Problems & How to Solve Them” describes the important story of why there is moisture in air lines, how it got there & its destructive action.
214G Van Products Co.

Autopositive Paper.....Describes Kodagraph autopositive paper—the “big new plus” in engineering drawing reproduction. “New Short Cuts & Savings” shows all the ways you can save with autopositive paper.
214H Eastman Kodak Co.

Copy Makers.....Apeco Dial-A-Matic all-purpose copy maker features relaxed, automatic copying of absolutely anything with the speed of automation, picture-sure accuracy, & at an economical cost. Illustrated Folder.
214I American Photocopy Equip.

Copying Equipment.....12 p. Brochure describes the versatility of xerography in preparing masters for offset, diazo, spirit and other fluid-type duplicating. Illustrates full line XeroX copying equipment.
214J Haloid Co.

Lubrication, Centralized..... Alemite Accumatic centralized lubricant prevents application of wrong lubricant; seals against dirt, grit, water; no parts are neglected; eliminates product spoilage; etc. Catalog.
215 *Stewart-Warner Corp.

Lubrication Systems.....Trabon lubrication systems guarantee that the right amount of oil or grease will be delivered to vital bearings . . . at the right time and in the right place. Details in Bulletin No. 529.
214K Trabon Engrg. Corp.

Lubrication Systems.....The Alemite Oil-Mist System offers: Continuous and fully automatic lubrication, elimination of guesswork, reduction of bearing temperatures. New Oil-Mist catalog.
214L Stewart-Warner.

Pads & Discs, Polishing.....Fully illustrated Folder includes information on Kapcor—Gelaco—Amcor polishing pads & discs . . . the longest lasting discs & pads made for polishing, rubbing & compound operations.
214M Kammel Products Corp.

Repainting Transformers.....Covers proper painting methods for longer paint life, preparation of paint, number of coats needed & includes a discussion of repainting subway transformers. Bulletin GET-677F.
214N General Elec. Co.

Reproduction Materials.....Kodagraph reproduction materials for new techniques . . . new savings . . . new standards of quality—in drawing and document reproduction. Full details in illustrated, 20 p.
214O Eastman Kodak Co.

Tools, Maintenance.....Gardner-Denver maintenance tools make plant housekeeping easier. Descriptive bulletin covers trench diggers, paving breakers, clay spaders, air hoists, sheeting drivers, drills, etc.
214P Gardner-Denver Co.

* From advertisement, this issue.

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Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 71).

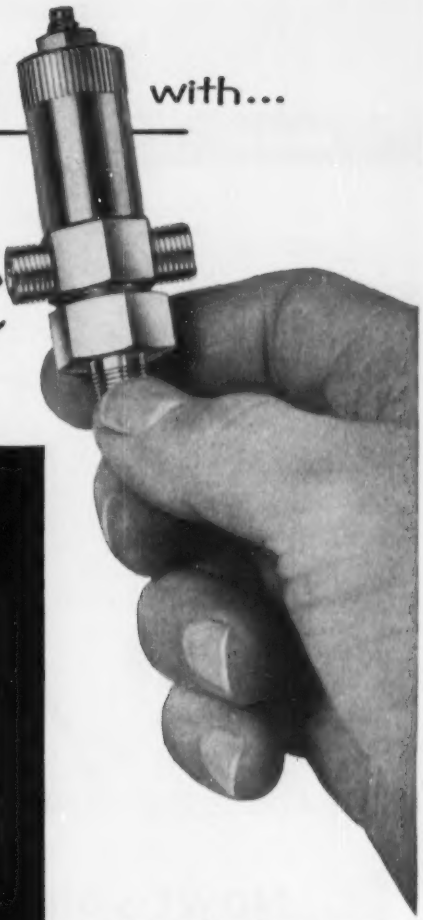
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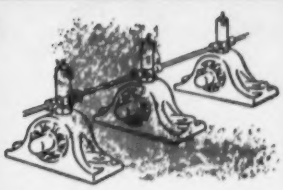
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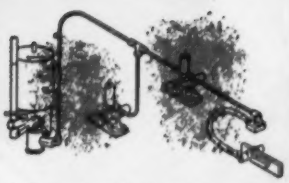
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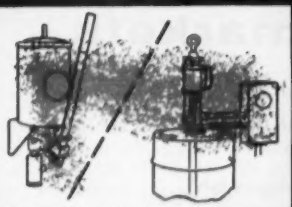
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2. Connect Accumatic fittings with copper tubing. (Alemite has tubing, clips and accessories for fast, neat installation.)



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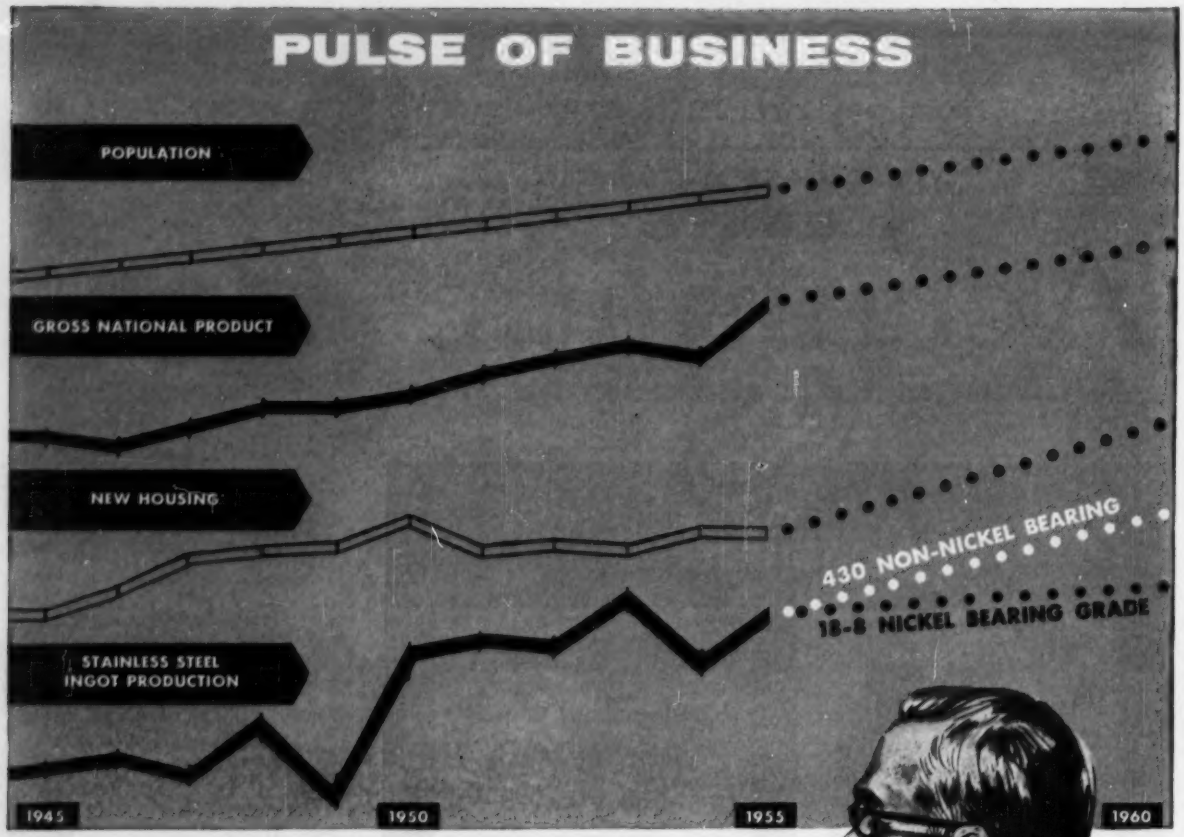
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Now! you can grow with your markets

. . . because Washington Steel Corporation has taken two big steps forward:

1. **Making available an adequate and dependable source of supply for Type 430 stainless steel.**
2. **Reducing the base price of Type 430 sheets to provide you with savings of $200 per ton as compared to Type 302 stainless sheets.**

Many designers and fabricators who are currently using Type 302 stainless can, in numerous applications, specify Type 430 straight chromium stainless and take advantage of the 10 cents per pound difference in base price. Some of our customers are already saving more than $200 per ton using our 430 MicroRold stainless steel.

The steel industry estimates that 50% of all stainless sheet applications could satisfactorily employ Type 430, the least expensive of all stainless grades, as an economical and practical material. When properly applied, Type 430 has all the desirable qualities of beauty, corrosion resistance, strength, long life and low maintenance that no other material, *except* stainless, can offer.

We are currently producing our MicroRold Type 430 sheets in thicknesses .005" to .109" with 2B or 2D finishes; and in thicknesses .010" to .109" in No. 3, 4 and 7 finishes.

Type 430 sheets are immediately available for delivery without restriction.
We are supplying the 18-8 grades against rated orders only.

Washington Steel

Corporation

9-S WOODLAND AVE., WASHINGTON, PA.

Send for your copy, "Care and Use of 430 Stainless"

Tubing, Aluminum

For corrosive conditions. (217A)

. . . New high-strength aluminum specialty tubing of 6066 Harvey alloy is highly resistant to general corrosive conditions found on many jobs. Made in a range of shapes and sizes it has good weldability and surface finish.—*Harvey Aluminum, Torrance, Calif.*

Barrier, Vapor

Foil-film laminate gives desirable properties. (217B)

. . . By laminating a one-mil sheet of aluminum foil between two half-mil sheets of Mylar polyester film one manufacturer has brought forth a unique vapor barrier. It combines the moisture impermeability of aluminum foil with the flexibility, strength, toughness and durability that are built into polyester film. On pipe insulation it provides moisture vapor-proof protection under exposure to salt air, corrosive fumes, oils and acids. Because it can be applied as easily as wallpaper it's fine for lining floors, walls and ceilings to control extreme humidity conditions. It is called Zero Perm laminate.—*Alumiseal Corp., New York* 17, *N. Y.*



Coating, Protective

For thermal insulation. (217C)

. . . Moisture-resistant Lagz coating protects insulation from damage by abrasion or puncture. It assures high thermal efficiency and low maintenance costs. The coating is compounded of neoprene, silicone rubbers and resins.—*West Chester Chemical Co., Westchester, Pa.*

Covering, Pipe

For low temperature lines. (217D)

. . . New LT cork covering for all low-temperture lines offers the insulating efficiency, the rigid strength and the long life of molded cork covering. Yet it can be bought and installed at a much lower cost. In all thicknesses, the corkboard segments are backed by asbestos and by aluminum laminated paper.—*Armstrong Cork Co., Lancaster, Pa.*



Gratings, Plant

Made of expanded metal. (217E)

. . . Direct from Florida comes a report on the use of expanded metal flooring and stair treads in the new phosphate recovery plant of Armour and Co., near Bartow. In addition to the usual advantages of open-type flooring this installation is estimated to have cost 30% less than bar-type treads of similar strength.—*Penn Metal Co., New York* 17, *N. Y.*

Joist, Steel

Supports floors and roofs. (217F)

. . . Designed for modern lightweight building the Ambridge Standard Steel Joist provides amply freeway for pipe conduit and other utilities. It is intended for small industrial units and other light occupancy buildings.—*U. S. Steel Corp., American Bridge Div., Ambridge, Pa.*

Lining, Tank

Restores corroded surfaces. (217G)

. . . A new tank lining cement is said to restore corroded interior surfaces of large water storage heaters and steel tanks. Cost is one-tenth that of installing a new tank. Extension of operating life may run to five or ten years.—*Pocono Fabricators, Inc., East Stroudsburg, Pa.*

Lining Material

Protects carbon steel, cheaper than alloys. (217H)

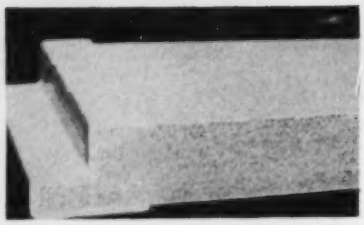
. . . A new fluorocarbon plastic laminate can be adhesive-bonded to almost any contoured surface. Many types of vessels, ranging from rectangular tanks to complex reactors, have been lined throughout with the materials. Laminate consists of 10-12 mil continuous layer of Kel-F plastic on glass cloth.—*Garlock Packing Co., Palmyra, N. Y.; U. S. Gasket Co., Camden, N. J.*



Panel, Construction

For wide industrial use. (218A)

. . . Just developed and now undergoing field tests is a strong, lightweight, insulated plastic-sandwich construction panel. In addition, it is moisture proof and corrosion resistant throughout. Hasko-Struct panels are of expanded polystyrene sandwiched between polyester sheets reinforced with fibrous glass.—*Haskelite Mfg. Corp., Grand Rapids, Mich.*



Resurfacing Material

Patches concrete floors, columns. (218B)

. . . Erco-Crete is a new compound for patching concrete surfaces that produces a renewed surface stronger and more durable than the original concrete. It is suitable for both interior and exterior exposures, is completely resistant to all straight-chain hydrocarbons, ethylene, glycol, glycerine, naphtha and vegetable oils.—*Earl Paint Corp., Utica, N. Y.*

Roof Deck

Of precast concrete. (218C)

. . . Prominent reasons for the 13 million sq. ft. of precast concrete roof deck installed in new chemical plants during the past decade are: ease of installation, lower cost than a poured roof, durability, fire resistance, reduced maintenance and insurance cost.—*Eden & Associates, Cleveland.*

Surfacing, Hard

Resists extreme vibration and heat. (218D)

. . . Offering improved resistance to heat and vibration Colomonoy No. 70 is recommended for chemical valves, acid pump parts and for equipment that handles loose abrasives. Alloy owes its properties to a high tungsten content which hardens the matrix. Other constitutents include nickel, chromium and boron.—*Wall Colmonoy Corp., Detroit, Mich.*

Tape, Pipe

Single wrap is effective. (218E)

. . . A new simple-wrap coal-tar tape is used for pipe, pipe joints, fittings and couplings. Tapecoat-X can be single wrapped with only ½-in. overlap. Older methods require that slightly more than half the tape width be overlapped for effective protection. —*Tapecoat Co., Evanston, Ill.*

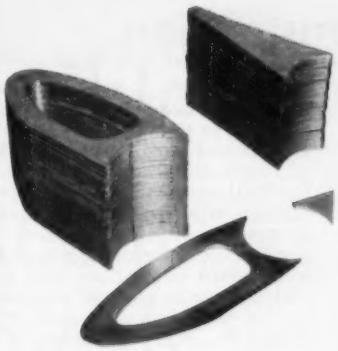


About This Equipment Inventory . . .

CE's second annual inventory of new equipment and accessories lists only new or newsworthy items that have been selected by CE editors for publication in August 1954–July 1955 issues. The 366 items in this inventory have, therefore, been carefully screened for their interest and value to chemical engineers in the chemical process industries. Emphasis is chiefly on equipment that can be used in commercial or large-scale processing and production units. For details on how to get more information, see p. 174.



Blank size: 3/8" thick x 16½" x 23½"



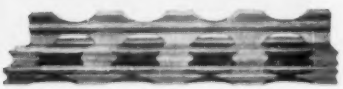
Blank size: 3/8" thick x 9" x 31"



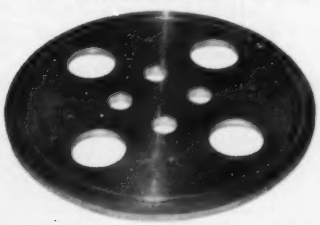
Blank size: 5" thick x 78" OD



Blank size: 4" thick x 7¾" x 71⅜".
Illustrations show before and after machining.



All the products illustrated here were flame cut, sawed, abrasive cut, sheared or machined from stainless steel plate.



Blank size: 2" thick x 60" OD

Stainless steel plate produced to your specifications for quick delivery

Confidence in Carlson service has made G. O. Carlson, Inc. the country's leading specialist in stainless steel plate. As we grew to this position in the industry, we learned and developed new methods of working stainless plate.

What does this mean to you?

It means you can buy for quick delivery exactly what you need in stainless steel plate—sheared, sawed, flame cut, abrasive cut, or machined. And this is true whether the job is a "toughy" or "run of the mill"!

When you need stainless steel plates—special patterns like these or plain rectangles—you'd better try Carlson service, where experience pays off.

write for CARLSON'S WEEKLY STOCK LISTS . . .
YOUR GUIDE TO WHAT'S AVAILABLE IN QUALITY STAINLESS STEEL

Stainless Steels Exclusively

G. O. CARLSON, INC.

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Plates • Plate Products • Forgings • Bars • Sheets (No. 1 Finish)

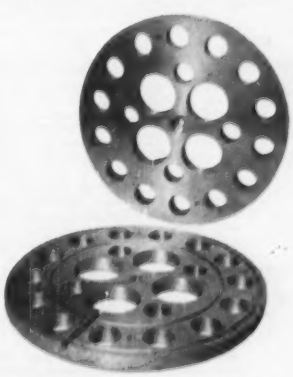
District Sales Offices in Principal Cities



Blank size: 3⅛" thick x 106½" OD



Blank size: ¼" thick x 75" x 88"



Blank size: 1½" thick x 26" OD

Tape, Pipe-Wrap

Prevents pipeline corrosion. (220A)

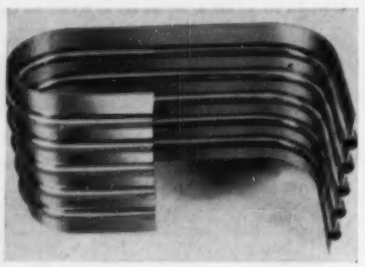
. . . Increased adhesion and conformability even at freezing temperatures are claimed for a new all-weather, polyvinyl-chloride, pipe-wrap tape. It's the first pressure-sensitive, polyvinyl-chloride tape formulated exclusively to prevent pipeline corrosion. Both surface and underground piping can be protected in pipelines, tank farms, chemical works, gas and water mains and service lines.—*Minnesota Mining & Mfg. Co., St. Paul 6, Minn.*



Tubes, Formed-in-Place

Homogeneous combination of tubes and strip. (220B)

. . . Considered ideal for heat exchange, new Tube-In-Strip material consists of single strips or sheets of solid copper, brass or aluminum. The nature of material is such that it can be inflated to produce tubes in the sheet. Expandable portions within the metal can be inflated into continuous running lengths either with compressed air or pressurized liquid.—*Revere Copper & Brass, Inc., New York, N. Y.*



TECHNICAL LITERATURE

MATERIALS OF CONSTRUCTION

Adhesives......"Adhesive Bonding" features illustrations of such typical adhesive applications as: aircraft aluminum honeycomb construction; fin tubing heat exchanger assemblies; etc. Illustrated, 8 p. Manual.
230C Rubber & Asbestos Corp.

Adhesives.....Latest developments in adhesives for Honeycomb Construction and Mylar Film Bonding . . . rubber, latex and resin cements, flocking cements, etc. 8 p. folder on Angier adhesives, coatings, sealers.
230a *Angier Adhesives.

Adhesives.....Data Charts list form, percentage solids, average viscosity, fastest optimum curing time, lowest optimum curing temperature and application suggestions covering thirty adhesive formulations.
230D Rubber & Asbestos Corp.

Adhesives.....Describes Polyoses—a new group of synthetic water-soluble adhesives for use in: prepared pastes; remoistening gums; paper laminants; mucilage formulations. Request copy of Polyose Technical Bulletin.
230E Corn Products Refining Co.

Alloys.....Offers "Materials Selection Chart" . . . a 4 p. chart designed to assist in the selection of the most economical alloy for a given corrosive problem. More than 350 specific corrosives are included.
287K Cooper Alloy Corp.

Alloys.....Hastelloy alloy D has excellent resistance to sulphuric acid in all concentrations and at temperatures up to the boiling point. Announces availability of a booklet which describes Hastelloy line.
230F Haynes Stellite Co.

Alloys.....Hastelloy alloy B is resistant to hydrogen chloride gas at high temperatures, wet or dry, & to hydrochloric acid. Readily fabricated & has high-alloy steel strength. Request booklet of product line.
230G Haynes Stellite Co.

Alloys.....Speed up pickling & reduce maintenance with Hastelloy Alloys: higher bath temperatures; increased acid activity; decreased maintenance; less contamination. For complete information, request Ref. No. F-8943.
230H Haynes Stellite Co.

Alloys.....Fully illustrated, 100 p. describes Haynes alloys for high-temperature service. Includes information on cobalt-base alloys, nickel-base alloys, iron-base alloys, etc. Request Bulletin No. F-6612C.
230I Haynes Stellite Co.

Alloys....."Advanced Know-How" . . . Series of case studies showing how advanced know-how made possible the economical production of high alloy products considered difficult or impossible to cast.
287J *Cooper Alloy Corp.

Alloys.....Announces an informative Brochure describing "Grac" . . . a lead-base anti-friction alloy. Included are the proven uses for Grac, an outline of how to use it, its outstanding properties, etc. 4 p.
230J Graphitized Alloys Corp.

Alloys, Aluminum Bronze.....Illustrated 32 p. booklet, "W W Premium Quality Aluminum Bronzes," includes valuable information on properties, specifications, applications, etc. Technical Data Bulletin 15.100-1.
230K W. W. Alloys.

Alloys, Cast.....Presents comprehensive article, "A Selection Guide to Corrosion-Resistant Cast Alloys." Includes data on mechanical, physical & fabricating characteristics of stainless alloys. Illustrated.
230L Alloy Casting Institute.

Alloys, Corrosion & Heat Resistant..... Presents a valuable "Alloy Reference Chart" . . . a 6 p. pamphlet listing alloy designations, applications, properties & analysis of corrosion & heat resisting alloys.
230M Cooper Alloy Corp.

Alloys, Exhaust-Valve.....Engineering Bulletin features technical data on the corrosion characteristics; metallurgical consideration; & chemical physical & mechanical properties of exhaust-valve alloys. Vol. 1 No. 1.
230N Thompson Products.

Alloys, Fabricated.....Illustrated, 36 p. covers both heat- & corrosion-resistant fabricated alloy products of company. Includes: furnace muffles; furnace trays & fixtures; retorts; etc. Request Catalog G-10.
230O Rolock, Inc.

Alloys, Hardsurfacing.....Describes newly developed line of hardsurfacing alloys. These materials consist of alloy-filled tubes, either in coils for automatic welding, or cut to length for manual application. 9 p.
230P Coast Metals

Alloys, Stainless Steel Brazing.....Fully illustrated catalog describes the chemical and physical properties and numerous typical applications of Nicrobraz stainless steel brazing alloys. Request Form No. SD-21.
230Q Wall Colmonoy Corp.

Alloys, Titanium.....Product bulletin describes the MST 6A1-4V titanium alloy. List metallurgy & chemistry of the alloy, properties & recommended heat treatment, forging & welding procedures.
230R Mallory-Sharon Titanium.

Aluminum.....Resists weathering. Request reprints "Resistance of Aluminum Alloys to Weathering," and "Resistance of Aluminum Alloys to Chemically Contaminated Atmospheres" for complete information.
230S Aluminum Co. of America.

Aluminum.....Process Industry applications of aluminum for producing everything from beer to bomb shells are analyzed in illustrated 80 p. book, "Process Industries Applications of Alcoa Aluminum."
230T Aluminum Co. of America.

Aluminum, Brazing....."Brazing Alcoa Aluminum," a new product reference, presents practical shop data & up-to-date developments in the art of brazing aluminum. Alcoa brazing materials are treated in full.
230U Aluminum Co. of America.

* From advertisement, this issue.

Compatible Coexistence in Petrochemicals

Compatible coexistence between highly corrosive chemicals and process or storage equipment is a requirement well known to Graver. In fact, Graver fabricating skills with a variety of alloys is why the petrochemicals industry, ever since its start, has turned to Graver for alloy process equipment, pressure vessels and storage tanks.

Graver fabrications in alloys are demonstrated by the petrochemicals installations illustrated here. The specifications are never too exacting, the project never too big to be fulfilled by Graver's country-wide manufacturing facilities.

"Call in Graver" is a compliment the petrochemicals industry pays us with great regularity. May we show you the advantages of calling in Graver the next time you have a project requiring alloy fabrication?

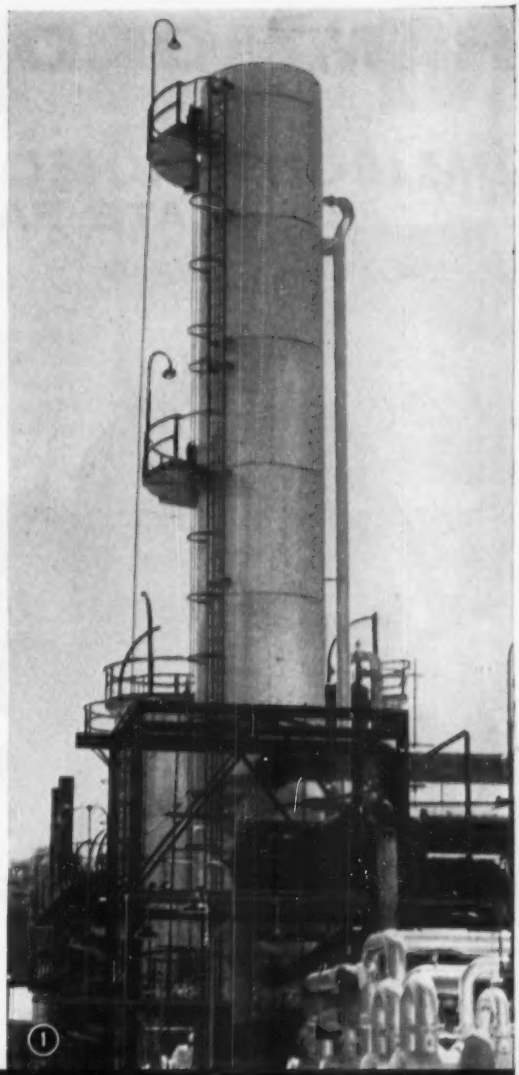
Some Examples of Skilled Graver Alloy Fabrications

1. 9′ by 68′ stripper column for a petrochemical plant

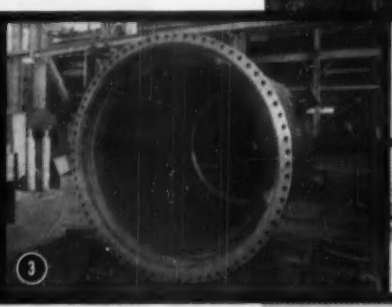
2. 12′ by 31′3″ aluminum storage bin for a synthetic fiber plant

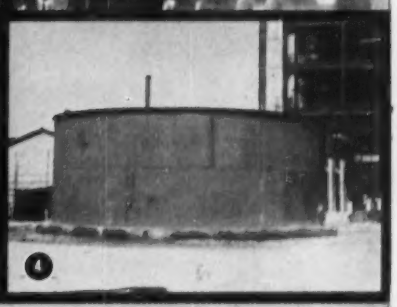
3. 4′6″ by 8′ solid stainless nitration vessel for a nitroglycerine plant

4. 41′ by 15′ field-erected Monel tank for acid residue









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Process Equipment • Pressure Vessels
Storage Tanks • Autoclaves • Digesters
Towers • Elevated Water Tanks
Oil Field Equipment • Weldments

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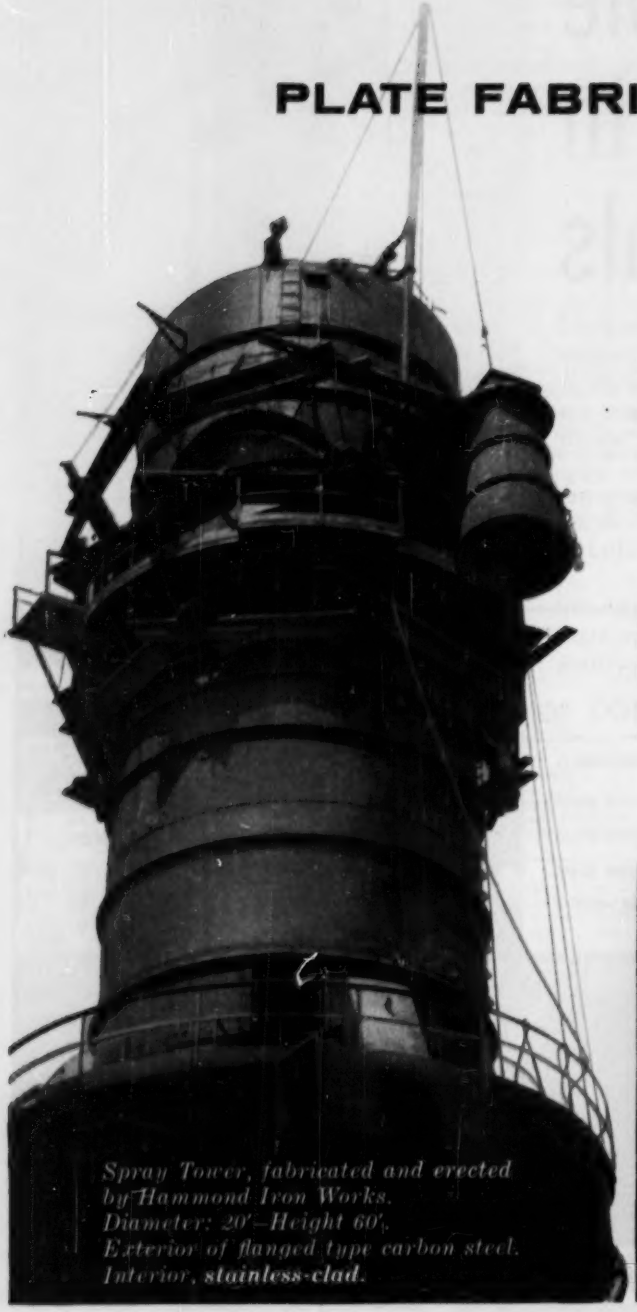
HAMMOND IRON WORKS

PLATE FABRICATION AND ERECTION

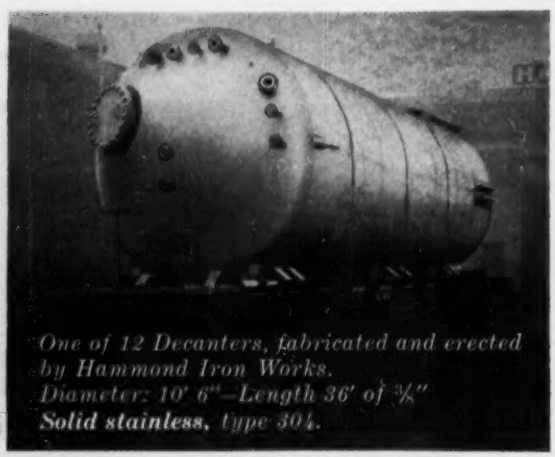
of Vessels, Tanks, Towers, odd and intricately designed chemical equipment...to any size...of any material: steel, aluminum, stainless, stainless-clad, special alloy, etc.

HAMMOND has a background of more than 50 years' successful service to the chemical industry. With its 5 plants and its know-how, based upon experience, no job is too large or too small for Hammond.

Catalog 54B illustrates the Hammond story ... write for your copy.



*Spray Tower, fabricated and erected by Hammond Iron Works. Diameter: 20'—Height 60'. Exterior of flanged type carbon steel. Interior, **stainless-clad**.*



*One of 12 Decanters, fabricated and erected by Hammond Iron Works. Diameter: 10' 6"—Length 36' of ¾" **Solid stainless**, type 304.*

HAMMOND IRON WORKS

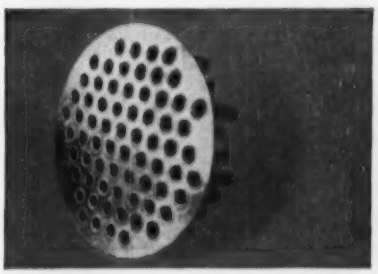
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TITANIUM

SOLVES TOUGH CORROSION PROBLEMS

HOT NITRIC ACID at pressures of 300 psi took a high toll of stainless-steel condenser tubes at a Du Pont plant—until this titanium "top-hat" was installed. Fabricated entirely of titanium, it provides a protective sleeve inside the top 3 inches of the condenser tubes. The unretouched photo shows the clean, uncorroded appearance of the "top-hat" after 14 months' continuous service. The titanium tube sheet, tubes and welds have essentially the same appearance as when installed . . . show evidence of being able to serve indefinitely.



HIGH-VELOCITY STEAM and biting hydrochloric acid were cutting the service life of cast-iron steam diffusers to less than 3 months at a Du Pont Pigments plant. Bronze and corrosion-resistant alloys were tried, without improvement. Then a diffuser fabricated from titanium was installed. This proved to be the answer. The photo shows the condition of the titanium diffuser after 2 years' service—a period ten times the average life of other diffusers. Compare the uncorroded appearance of the titanium diffuser with the cast-iron flange, which shows severe acid attack.



A partial list of other environments where TITANIUM offers unmatched corrosion resistance . . .

CORROSIVE CHEMICALS	CONDITIONS	POSSIBLE APPLICATIONS
Ferric Chloride	0-30% at 100° C.	Process piping
Sodium Chloride	All Conc. at 100° C.	Kettles, heat exchangers
Chlorine-Saturated Water	Room Temperature	Proportioning equipment
Wet Chlorine Gas	75° C.	Recovery equipment, electrolytic cells
Chromic Acid	10% and boiling	Plating equipment
Sulphuric-Nitric Acid Mixture	40% sulphuric, 60% nitric at 35° C.	Acid heaters, nitrators, auxiliaries
Calcium Hypochlorite	6%-35° C.	Filter presses, processing equipment
Zinc Chloride	20%-100° C.	Coils, pans, evaporators

TITANIUM MAY BE THE ANSWER TO YOUR CORROSION PROBLEM

If you're looking for a way to improve your product . . . or cut production and maintenance costs by extending the service life of essential equipment . . . it may pay you to investigate titanium. As a pioneer *supplier* of titanium sponge, Du Pont has the experience to offer you expert technical help with your evaluation tests . . . can put you in touch with manufacturers best equipped to work with you on your particular product or application. Considerable fabricating know-how and a wide variety of mill shapes are available now to help you use titanium to solve your corrosion problems. For more detailed information on titanium, just check the coupon below, or write: E. I. du Pont de Nemours & Co. (Inc.), Pigments Department, Wilmington 98, Delaware.



TITANIUM SPONGE

PIONEERED COMMERCIALLY BY DU PONT

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

E. I. du Pont de Nemours & Co. (Inc.)
Pigments Department CE-9
Wilmington 98, Delaware

☐ Please send me your new technical bulletin on the corrosion-resistant properties of titanium.

☐ Please send me your general booklet on titanium.

I am interested in using titanium for:_____

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*Name*_____

*Firm*_____ *Position*_____

*Address*_____

*City*_____ *State*_____

TECHNICAL LITERATURE

Aluminum Products—

Coatings, Protective

Aluminum Products.....Brochure describes complete range of Harvey Aluminum's wrought aluminum mill products. Illustrations & text cover extruded shapes, structurals, machining stock, etc. "Aluminum Products."
224A Harvey Aluminum.

Anode, Magnesium.....Describes details of size, weight and attachment fittings for magnesium anodes used to protect ballast tanks, ship hulls and piers against sea water galvanic corrosion. Bulletin 160.
224B Federated Metals Div.

Castables, Refractory.....Company offers a table of products and uses for a wide range of specialized refractory castables. To help solve castable problems with helpful data, request Bulletin R-35.
233 *Babcock & Wilcox Co.

Castings.....Haynes' investment-casting process is used to improve product design, solve difficult fabricating problems & make important savings in production costs. Refer to "Haynes' Investment-Casting."
224C Haynes Stellite Co.

Castings.....Corrosion-resistant castings from created metals . . . to help solve your tough product design problems. Offers 40 years of experience in producing top quality castings. Request informative literature.
224D Waukesha Foundry Co.

Castings.....Presents "Newscast" . . . an 8 p. bi-monthly publication devoted to reporting technical material of value to those interested in corrosion resistant castings, fittings, valves and pumps.
287e Cooper Alloy Corp.

Castings.....Casting a 1¼ lb. stainless steel instrument housing demands design conferences etc. For the full story of how this "impossible" casting is being cast on the production line, request AKH Study #3.
224E Cooper Alloy Corp.

Castings, Alloy.....Designed for long life under the most rigid service conditions requiring superior resistance to abrasion, corrosion, oxidation, high pressures and high temperatures. Details available on request.
225b *Babcock & Wilcox Co.

Castings, High Alloy.....Covers facilities for producing high alloy static & centrifugal castings & offers data on castings used for resisting high temperatures, corrosion & abrasion. Request Bulletin No. 3150-G.
224F Duraloy Co.

Castings, Metal......"Allegheny Metal Castings" furnishes valuable information on stainless castings: analyses; properties; technical data on handling & heat treatment; typical application; etc. 32 p.
224G Allegheny Ludlum Steel Corp.

Castings, Stainless Steel.....4 p. folder presents variety of cast parts with information as to alloy, weight, application. Data chart lists 28 alloys with recommendations for their use included. Available on request.
287n *Cooper Alloy Corp.

Castings, Steel....."Recommended Practice for the Welding of Steel Castings" covers welding methods, electrodes & recommended welding procedure for carbon-steel & low-alloy steel castings.
224H Tempil Corp.

Cathodic Protection.....Anaconda Type CP cable and cathodic protection cut corrosion costs—gas mains and water pipes — lead-covered cable — underground storage tanks—etc. Details in Bulletin DM 5450.
224I Anaconda Wire & Cable Co.

Cement Sheets, Asbestos.....J-M Asbestosite combines these advantages: weather resistant; fireproof; fights corrosion; cuts maintenance costs; permanent as stone. Request brochures IN-121A & IN-173A.
224J Johns-Manville Co.

Cements, Insulating.....Eagle-Picher One-Cote cement insulates, protects, finishes in one quick application. Cement is clean, easy to handle—provides a smooth, light-reflectant surface. Request free sample.
224K Eagle-Picher Co.

Ceramics, Chemical.....Today's chemical ceramics feature superior characteristics: better heat-shock resistance; higher mechanical strength; closer dimensional tolerances. Bulletins C-5 & CP-50. Request.
224L U. S. Stoneware Co.

Coating Systems, Protective.....Modern approach to maintenance-painting halts corrosion. Sixteen specialized protective coating systems cover requirements of hundreds of strong corrosives. Bulletin No. MC-8.
224M Metal & Thermit Corp.

Coating Systems, Protective.....New Ucilon coating systems give chemical engineers effective weapons against corrosion. Systems based on neoprene coatings for air dry or force dry application. Bulletin No. MC-9.
224N Metal & Thermit Corp.

Coatings, Ceramic.....Announces the publication of a 4 p. bulletin on Molcote, new metallized ceramic coating for use with all types of hard solders. For further details, request descriptive Bulletin 1155.
224O Frenchtown Porcelain Co.

Coatings, Protective.....Aluminum paints keep maximum lustre & give lasting protection under severe conditions of moisture, alkali & acid fumes, creep corrosion & hot sunlight. Formulated in 4 types. Request literature.
224P Arco Co.

Coatings, Protective.....Covers 25 types of maintenance paints & coatings. Divided into sections according to job so that reader can quickly find type of paint recommended by manufacturer for a specific purpose. 6 p.
224Q Thompson & Co.

Coatings, Protective....."How to Apply Iron Phosphate Coatings to Steel in Preparation for Painting" covers process by which iron phosphate coatings improve paint adherence & prevent corrosion on steel. 12 p.
224R Oakite Products.

Coatings, Protective... Announces availability of a brochure on Laqua, new coating for metals that preserves chemically cleaned surfaces obtained directly after electro-plating or a chemical cleaning operation.
224S Fidelity Chem. Products.

Coatings, Protective.....A new 12" by 18" comparative guide form blank available for your use in comparing coating systems. Shows method to arrive at cost per sq. ft. per year of service for each system considered.
224T Carboline Co.

Coatings, Protective.....Phenoline 300 protects concrete . . . under severe corrosive conditions. Highly resistant to acids, alkalies, solvents. New Bulletin, sample of troweled Phenoline & corrosion data.
224U Carboline Co.

Coatings, Protective.....Phenoline 305 for heavy duty maintenance protection in severe corrosive atmosphere needs only 2 coats. Complete data in available & also comparative data chart.
224V Carboline Co.

Coatings, Protective.....Bulletin describes Prufcoat "A" Series of versatile general-use vinyl coatings. Includes build, application, appearance, adhesion, color, and resistance information. Bulletin No. 239.
226b *Prufcoat Labs.

Coatings, Protective.....Describes application of Sprayed Metal Coatings to processing equipment, storing & shipping containers, tanks, tank cars, etc. for contamination & corrosion protection. Illustrated.
224W Metalweld, Inc.

Coatings, Protective.....Literature Folder includes booklets on: Rowe's Polyvinate Coating System; Rowe's Neoprene Coating System; Rowe's Asphalt Coating System; Rowe's Rocrolite Coating System; etc.
224X Rowe Paint & Varnish Co.

Coatings, Protective.....Bulletin describes how good structural design aids coatings in protecting steel surfaces. Tells how to weld, rivet & use structural materials to avoid creation of corrosion problem areas.
224Y Amercoat Corp.

Coatings, Protective.....Illustrated Catalog describes Amercoat protective coating systems for corrosion control. Outlines corrosion control services: assistance in selection, help write specifications, etc.
224Z Amercoat Corp.

Coatings, Protective....."Cold Galvanize" existing steel structures with 100% inorganic zinc protective coating. One spray coat protects against weathering exposures to sea air & salt water. Request Dimetcote Bulletin.
224AA Amercoat Corp.

Coatings, Protective.....Fully illustrated, 25 p. Catalog offers complete information on the anti-corrosion tapes manufactured by Polyken Sales Division. Features success in protection of underground pipelines.
224BB Kendall Co.

Coatings, Protective.....A polyethylene tape coating for corrosion-control on fittings & irregular shaped contours. Polyken No. 940 is designed for use on ells, valves & fittings. Request complete details.
224CC Kendall Co.

Coatings, Protective.....Atlas produces a complete line of neoprene, vinyl, styrene, epoxy, chlorinated rubber & polyester coatings. They are pioneers in corrosion protection. For further data, refer to Bulletin 7-2.
224DD Atlas Mineral Prods. Co.

Coatings, Protective.....Bulletin describes Prufcoat "A" Hot-Spray Vinyl, & the hot-spray technique. Includes important features, anti-corrosion properties and a recommended coating system. Bulletin 240A.
226a *Prufcoat Labs.

Coatings, Protective.....For any equipment or surface that can be uniformly baked . . . Plastisol compounds offer easy, economical way to apply long-lasting vinyl coating protection. Data in Bulletin No. VP-1.
224EE Metal & Thermit Corp.

Coatings, Protective....An epoxy resin protective coating with a fast-curing, easily handled activator. Makes available a new Technical Bulletin on Rowe's, "Epoloid System of Positive Protection." Request your copy. 4 p.
236 *Rowe Products.

* From advertisement, this issue.

Can't remember?

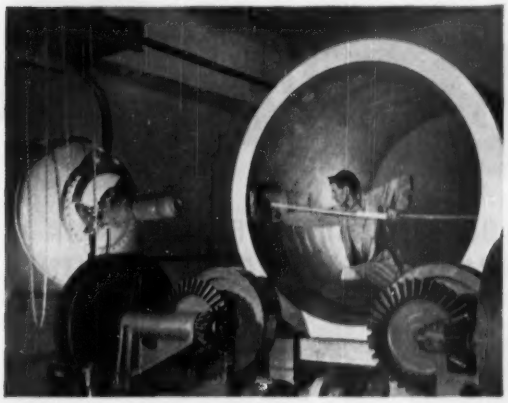
Can't quite recall who built that new plant, who developed that new process? Well, then, take a crack at finding the answer in this issue's Inventory of New Plants & Facilities (p. 7) or Inventory of New Processes & Technology (p. 45). They're designed to help you.

Process Equipment that meets *TODAY'S* Requirements

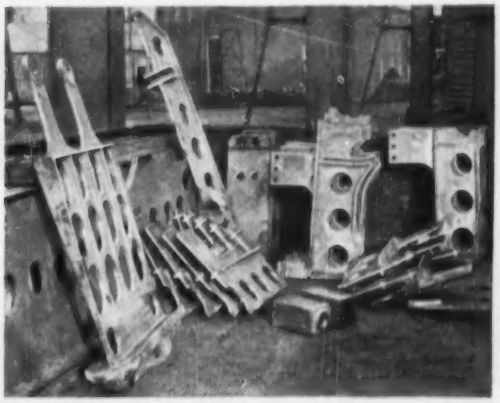
B&W Accumulators • Alloy Castings • Hollow Forgings

The constant progress being made within the process industries demands the utmost of the engineers responsible for the dependability, efficiency and economy of the equipment that serves today's process industries' requirements.

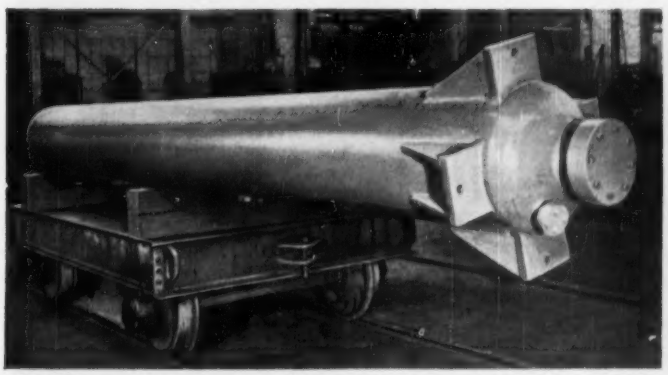
At B&W, forming, machining, welding, X-raying and stress relieving are all performed on equipment specially designed for the job, much of it developed by B&W. And for temperature and pressure problems that arise, new and practical solutions are continually being developed through designing skill based on long experience.



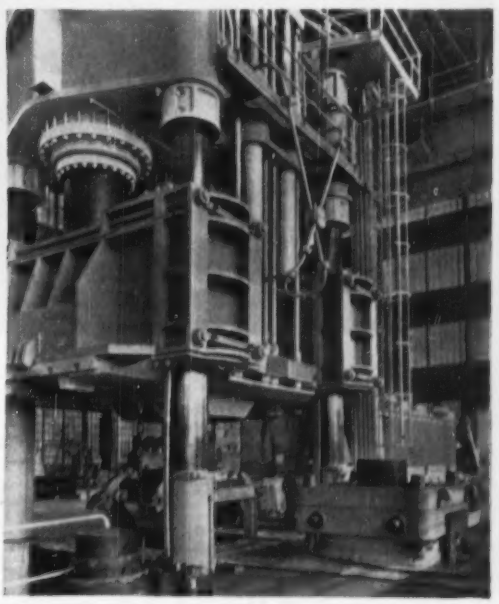
2,000,000-volt X-ray is the all-seeing eye that checks the soundness of welds.



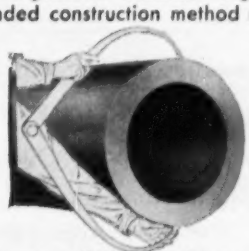
B&W Alloy Castings are cast-to-last . . . designed for long life under the most rigid service conditions requiring superior resistance to abrasion, corrosion, oxidation, high pressures and high temperatures.



B&W Accumulators are manufactured in the range from 500 to 6000 psi or higher, with capacities from 5 gallons to 10,000 gallons. Large accumulators designed to withstand higher pressures are fabricated by the banded construction method unique with B&W.



B&W's giant new press, used in making Hollow Forgings, and other products needed to meet industry's growing demands.



These large-diameter, heavy-wall pipes or tubes offer the designer the advantages of single lengths or many lengths, "tailor-made" to his requirements . . . prompt delivery even on small orders . . . full forging properties resulting from thorough working of the metal . . . excellent concentricity . . . wide size range available. Supplied in a wide range of carbon and alloy steels.

Write for detailed information about the B&W equipment you need to keep your plant in best condition to meet today's competition. The Babcock & Wilcox Company, Process Equipment Department, Barberton, Ohio.

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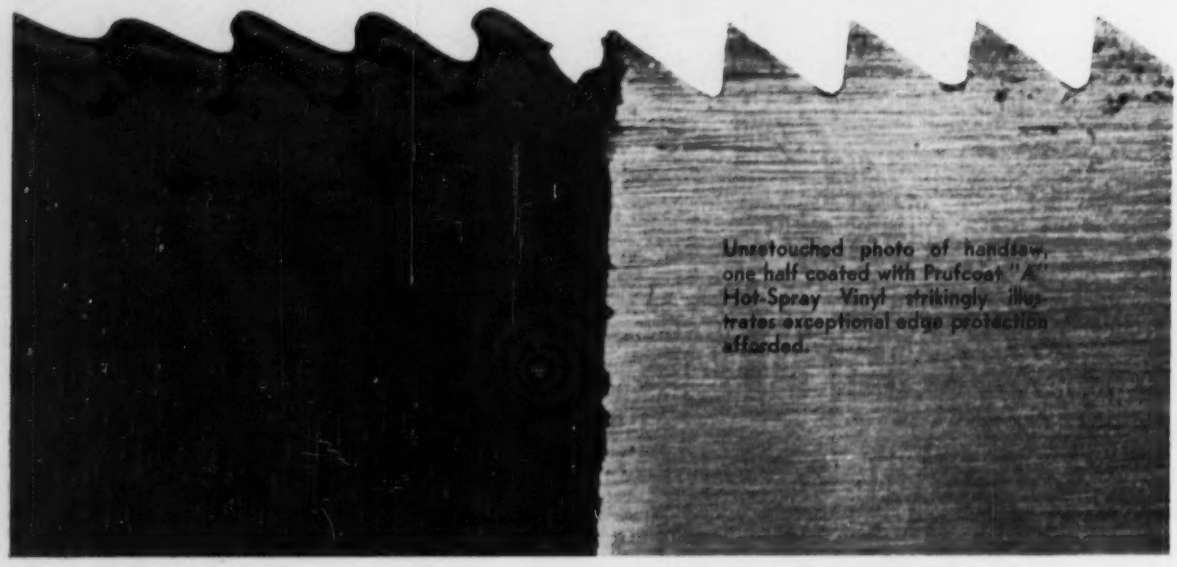
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PRUFCOAT
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"A"
HOT-SPRAY
VINYL

DRAMATIC PROOF . . .

OF THE HIGH BUILD BENEFITS MADE POSSIBLE BY PRUFCOAT "A" HOT-SPRAY VINYL



Unretouched photo of handsaw, one half coated with Prufcoat "A" Hot-Spray Vinyl strikingly illustrates exceptional edge protection afforded.

Here is a quick run-down of Prufcoat "A" Hot-Spray advantages and benefits . . .

✔ 5 TO 20 MILS IN JUST ONE APPLICATION

✔ Exceptional Edge Build
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✔ Overspray Minimized
✔ Big Material & Labor Savings
✔ Paint Fogging Eliminated
✔ Easy Application
✔ Unequaled Coating Density
✔ Fine Appearance

For the latest information on Prufcoat Protective Coatings write for Prufcoat "A" Hot-Spray Vinyl Bulletin No. 240A, new Prufcoat Corrosion Control Bulletin No. 301, Universal Primer P-50 Bulletin No. 015B and "A" Series Bulletin No. 239.

PRUFCOAT LABORATORIES, INC. 50 East 42nd Street New York 17, N. Y.

AL Stainless Steels
for the Process Industries

VARIOUS TYPES—Generally speaking, stainless steels are divided into three groups: chromium, chromium nickel, and chromium-manganese-low nickel steels. Their corrosion resistance, hardenability, tensile strength, etc., varies with the proportion of chromium, nickel and other alloying elements each type contains.

The chromium stainless grades are divided into two types: martensitic steels, which are hardenable; and ferritic non-hardenable steels. Both types are magnetic. The chromium nickel and chromium-manganese-low nickel stainless grades are austenitic steels, hardenable only by coldworking, and are non-magnetic.

The principal chromium stainless steels of chemical industry significance are Types 410, 431 and 440A martensitic grades, and Types 405, 430, 442 and 446 ferritic steels. Chromium nickel austenitic steels of principal importance are Types 302, 304, 316, 317, 347, 309 and 310. In the more recently developed chromium-manganese-low nickel austenitic group, Type 202 has physical and mechanical properties closely approximating those of Type 302—with the advantage of much lower nickel content and more ready availability in times of nickel shortage.

PRINCIPAL GRADES—Industry has called for quite an extensive range of chemical and physical properties in stainless steels. To meet these requirements, types have been developed which are best suited for a particular application: such as Types 316 and 317 for extra corrosion resistance, Types 309 and 310 for extra high temperature service, etc. Knowledge of these stainless steel qualities is essential for engineers and designers to create a product that will best do the work for which it was intended. Complete data on AL Stainless Steels is available in the various publications listed below.

Of all the stainless steels, the grades most used in the chemical and allied industries are Types 304, 316, 317 and 347 chromium nickel steels. The first three grades are also available in extra low carbon varieties to meet extreme conditions of fabrication or service which might carry the threat of intergranular corrosion. Designated Types 304L, 316L and 317L, these low carbon stainless steels are practically immune to carbide precipitation in the as-welded condition. Like Type 347, they permit the field-welding and stress-relieving of material of any thickness, for example, without the hazard of intergranular corrosion.

REGULARLY SUPPLIED FORMS—Allegheny Ludlum Steel Corporation is in position to furnish the various grades of stainless steel in all of the commercial forms required by fabricators of these metals. These include:

- Plates, including formed heads
- Sheets, either coiled or straight cut lengths
- Strip, either coiled or straight cut lengths
- Bars, rounds . . . flats . . . hexagons . . . octagons . . . squares or special shapes
- Billets, for forging or upsetting
- Angles
- Wire
- Tubing, seamless or welded
- Castings and smooth-hammered Forgings
- Extrusions
- Clad stainless

Information as to size ranges and mill tolerances are available in literature devoted to detailed discussions of AL Stainless Steels.

SPECIAL REQUIREMENTS—When selecting a grade of corrosion and heat resisting steel for a given application, it should always be borne in mind that laboratory tests, however carefully performed, can be expected at best to be only indicative of field performance. Variations in actual service conditions are so wide that a special study of the case at hand may be necessary at times. To that end, Allegheny Ludlum engineers and technical men are available for consultation on unusual problems involving stainless applications.

FABRICATION—AL Stainless Steels may be easily fabricated by any of the usual processes—welding, drawing, blanking, machining, spinning, forging, riveting, shearing, soldering, etc. In some instances, however, care must be exercised in handling of the material to preserve its corrosion or heat resisting properties. No one should undertake to fabricate any of the stainless steels without a full understanding of these handling procedures. Proper processing is fully discussed in Allegheny Ludlum literature—available on request.

RESISTANCE TO ATTACK—There is a wide range of conditions under which AL Stainless Steels operate in resisting corrosive attack at normal and elevated temperatures. Detailed information regarding their resistance to various media, heat resistance and strength will be sent upon request. See the publication list below.

STAINLESS CLAD STEEL—Allegheny Ludlum Stainless Clad is available commercially in the following commodities:

- Double Clad—Stainless both surfaces with carbon steel core. In plates, sheets and strip.
- Single Clad—Stainless one side only; plates only 3/16" and heavier.

Special clad materials on application.

PUBLICATIONS AVAILABLE

The following list of technical and service literature is freely available on request; just ask for the bulletins which contain the type of information you need.

Blue Sheets—An individual Blue Sheet, containing certified laboratory data on physical and chemical properties, etc. is available on each grade of AL Stainless Steel.

Fabrication of Stainless Steels—Contains valuable data for your shop men on various methods of handling, forming and finishing stainless steel.

AL Stainless Steel in Chemical Processing—36 pages on various applications, advantages, etc. of stainless in the chemical industry.

Stainless Steel Handbook—A case-bound book of 124 pages, containing complete data leading to the proper selection and fabrication, etc. of the correct grade of stainless for each application.

• Write to *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.*

ADDRESS DEPT. NO. CE-81

WAD 9787

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AL STAINLESS STEEL

TECHNICAL LITERATURE

Coatings, Spray— Insulation, Glass Fiber

Coatings, Spray.....Rokide spray coatings are applied in a molten state by means of a metalizing type spray gun. These hard, adherent crystalline refractory oxides offer many advantages. Request detailed information.
228A Norton Co.

Concrete, Gas.....Company announces the availability upon request of a profusely illustrated reference containing detailed information about the properties, production and use of Durox gas concrete. 12 p.
228B Skövde Gasbetong Aktiebolag.

Corrosion Control.....Bulletin describes Prufcoat coatings for corrosion control. Offers essential element upon which an effective corrosion-control program must be based, with minimum damage & maximum saving. Bulletin 301.
226c *Prufcoat Labs.

Corrosion-Proofing Materials.....Brochure on corrosion-proofing materials & techniques contains information on cement mortars, interliners for masonry construction & protective linings for surface treatment. 8 p.
228C Pennsylvania Salt Mfg. Co.

Covers, Valve & Flange.....Indicating "Spray-Stops" give vivid color-change warning of leaks in either acid or caustic application. Also offer teflon covers for high temperature lines. See illustrated bulletins.
228D Neirad Industries.

Electric Furnace Shapes.....Literature covers electric furnace refractories—cores, tubes, muffles—of Alundum or Crystolon materials. Tells in detail how to construct electrical furnaces for laboratory. Bulletin 458.
35-8g *Norton Co.

Electrodes, Tungsten.....Makes available a valuable technical reference on Premium Quality tungsten electrodes for helium, argon and hydrogen arc welding. Request your copy of Technical Data Bulletin 14.150.
228E WW Alloys.

Electroplating Charts.....Designed to be invaluable in costing & every other operation connected with precious metal electroplating. Provides all related & comparative data on gold, rhodium, palladium, platinum, silver.
228F Technic, Inc.

Fabricated Equipment, Aluminum..... Product literature describes company's line of aluminum custom fabricated equipment, including pressure vessels, storage & processing tanks, heat exchangers, towers, etc.
228G Washington Aluminum Co.

Fabricated Products, Polyethylene & Polyvinyl Chloride.....48 p. reference illustrates & describes line of polyethylene & polyvinyl chloride fabricated products, plates, sheets, rods, tubes, etc. Bulletin AA-3.
228H American Agile Corp.

Fabrication.....Foster Wheeler's exceptional facilities for heavy fabrication can solve your toughest forming, machining and welding problems. Details on fabricating facilities in Bull. GS-56-4.
31a Foster Wheeler Corp.

Fabrication.....New catalog describes Hammond's plate fabrication & erection, of vessels, tanks, towers, odd & intricately designed chemical equipment—to any size—of any material. Request Catalog 54B.
222 *Hammond Iron Works.

Fabrication & Erection, Piping.....Facilities brochure pictorially illustrates Mercury Piping Company operations in fabrication and erection of low and high pressure piping. Copies available upon request.
228I Mercury Piping Co.

Fabrication, Metal.....Manufactures metal products for many industrial uses . . . from complete carbon-black plants to steel conveyor boxes. Designs, engineers and fabricates to specific needs. Full data.
228J Boardman Co.

Fabrication, Metal.....Booklet, "Facilities & Products," with information & photographs which show why company can turn out—at low cost—specialized heavy equipment for chemical plants, available upon request.
228K Newport News Shipbuilding.

Fabrication, Plate.....Illustrated, 12 p. covers dozens of typical examples of plate fabrication work done by the company for chemical, refining, petrochemical, food and other process industries. Request Bulletin PF.
228L Downington Iron Wks.

Fabrication, Polyester Bonded Fiber Glass Products.....Homogenous for longer service & greater strength—precision fabricated for low cost installation—smooth, friction reducing surfaces. Properties & applications. 8 p.
228M Du Verre.

Fabrication, Process Equipment.....With nearly 50 years experience in custom fabrication, Stover builds & designs tanks, pressure vessels & special weldments for all kinds of industry problems. Illustrated, 4 p.
228N Stover Steel Tank & Mfg.

Fabrication, Process Equipment..... Designed and built around the use of Haveg—basic construction material that resists corrosion. Includes size and chemical resistance charts in 64 p. illustrated Bulletin F-6.
228O Haveg Corp.

Fabrication, Specialty.....Presents fully illustrated brochure of fabricating facilities of a company which specializes in engineering and fabrication of specialty and custom-built equipment. Request Catalog No. 155.
228P Fritz W. Glitsch & Sons.

Fabrication, Stainless Steel.....Features the techniques of fabricating equipment with round corners for efficient service—round corners are stronger . . . easier to clean. Guide provides complete information.
228Q S. Blickman, Inc.

Fabrication, Stainless Steel.....Offers quality workmanship, economical fabrication to the most exacting specifications . . . in large or small quantities. "Sheet and Plate Fabrication" & "Electrical Enclosures" on request.
228R Kirk & Blum Mfg. Co.

Fabrication, Steel.....Fully illustrated brochure furnishes detailed information about the company, the products they make, the manner in which they are organized, the facilities & equipment they have. 20 p.
228S Wm. Bros. Boiler & Mfg.

Fabrication, Steel & Alloy Plate..... New 48 p. reference describes in words & pictures the facilities & workscope of company—offering techniques in custom fabrication of steel & alloy plate. Catalog 554.
228T Nooter Corp.

Fabrication, Vessel.....Illustrated 32 p. brochure, "Prototypes in Boilerplate," describes art of fabricating vessels of odd shape & complex design for chemical, petro-chemical & nuclear energy industries.
228U Steel & Alloy Tank Co.

Film & Sheeting, Cast Vinyl.....Krene Cast Vinyl Film offers valuable benefits . . . especially for packaged foods, hardware, soft-goods, and many other products. Request product samples and informative Booklet.
228V Bakelite Co.

Finishes, Industrial Maintenance..... 48 p. offers data on interior & exterior paint for walls, roofs, floors, etc. to serve as a guide in selecting Steelcote products suited to each maintenance need. Catalog 56.
228W Steelcote Mfg. Co.

Foil, Aluminum.....Illustrated, 52 p. includes sections on: physical, chemical & mechanical properties; general quality characteristics; foil converting operations; aluminum foil in packaging; etc. Form AD-305.
228AA Aluminum Co. of America.

Foil Metal.....AMF introduces electrically insulated metal foil. "Amfoil" is used principally in sub-miniature capacitors, coil forms, transformers, shielding, and flexible packaging. Request complete details.
228BB American Mach. & Foundry.

Grating & Stair Treads.....Blaw-Knox electroforged steel grating makes every step a safe step indoors or outdoors. Makes available new reference & quotations. For more complete information request Bulletin 2486.
228CC Blaw-Knox Co.

Insulating Sheet Material....."Marinite For Driers, Ovens, Breechings and Housings" offers complete information on structurally strong sheet material which both builds and insulates. Illustrated, 16 p.
228DD Johns-Manville.

Insulation.....Covers 10 properties of Thermalastic insulation that extend life of generators, synchronous condensers, frequency changers, large motors & other heavy rotating equipment in hard service. Booklet B-6506.
228EE Westinghouse Elec. Corp.

Insulation.....Complete service for efficient thermal conservation. Experienced, nation-wide insulation services . . . complete from manufacturing to application. Complete details in Mundet Insulation Bulletin.
235 *Mundet Cork Corp.

Insulation....."Johns-Manville Products Handbook" covers 11 lines of J-M products: insulations & refractory products; Transite asbestos-cement pipe; packings & gaskets; electrical products; etc. 52 p.
228FF Johns-Manville.

Insulation.....In addition to corrosion data and information on new metals, this new insulation manual describes and illustrates the company's complete line of equipment and supplies. "New Insulation Manual."
228GG A. J. Gerrard & Co.

Insulation, Blanket.....Outstanding chemical & physical characteristics of Eagle-Picher mineral wool provide maximum thermal efficiency at temperatures as high as 1200 F. Makes available a product sample.
228HH Eagle-Picher Co.

Insulation, Block.....Eagle-Picher PV Supertemp block insulation . . . with the new "precision-finish." A highly efficient, all-purpose insulating block that is practically dustless. Offers valuable product sample.
228II Eagle-Picher Co.

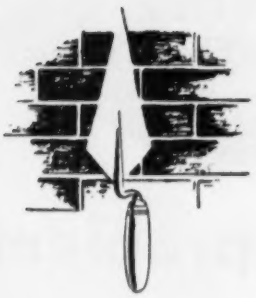
Insulation, Cellular Glass.....Gives you the maintenance-free insulating performance you need for your piping, tanks, spheres and other industrial equipment. Request product booklets & "Foamglas" sample.
228JJ Pittsburgh Corning Corp.

Insulation, Glass Fiber.....Versatile and efficient Ultralite features numerous advantages as insulation for all types of large heated equipment. Request "How-To-Do-It" details and specifications.
228KK Gustin-Bacon Mfg. Co.

* From advertisement, this issue.

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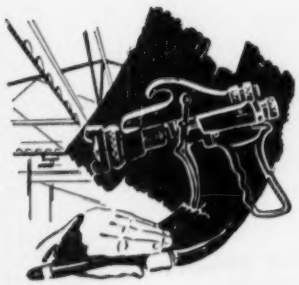
PLANT WIDE PROTECTION from CORROSION



FOR INDUSTRIAL FLOORS, VESSEL INTERIORS, STACKS and OTHER MASONRY STRUCTURES

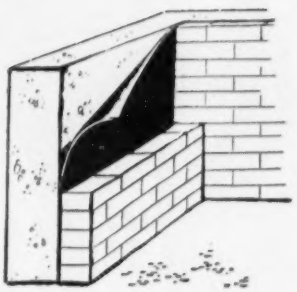
Atlas Corrosion Proof Cements tightly bond acid brick to assure strong, long lasting structures.

In addition to outstanding corrosion resistance, Atlas cements exhibit the desirable physical properties of high adhesion, high tensile strength and low shrinkage.



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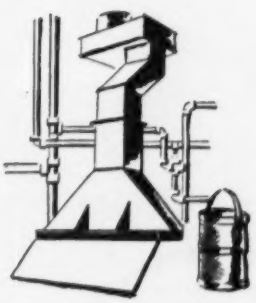
Atlas Protective Coatings protect valuable equipment and structures from fumes and splash of corrosives. A wide variety of coatings assures you of the correct coating to fufill your specific needs.



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Atlas offers a number of Standard Corrosion Proof Linings. Each lining is resistant to a broad range of chemical agents; each is tough and resilient for long-term service.

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- COATINGS
- LININGS
- RIGID PLASTICS

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If you have a problem dealing with corrosion, let Atlas help you find a solution with sound, time-tested recommendations.

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MERTZTOWN, PENNSYLVANIA

a custom service for your adhesive, coating, sealer problems

ANGIER ADHESIVES

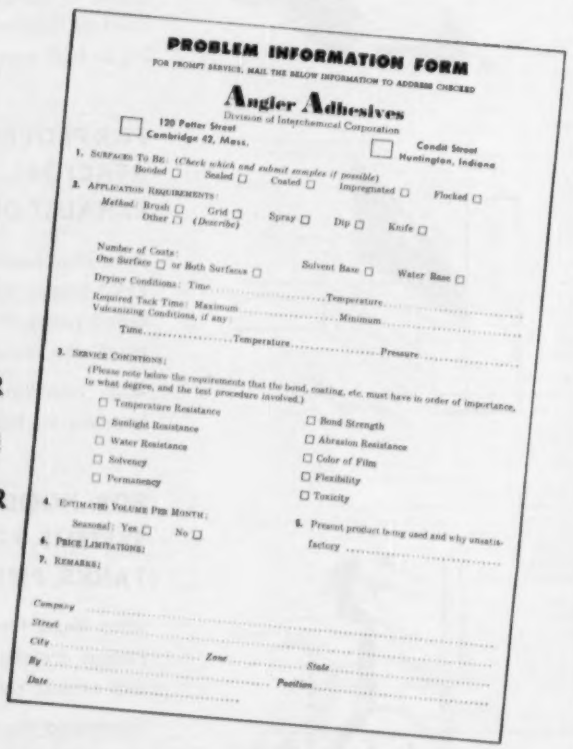
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You are invited to copy or request the Problem Information Form shown here for your convenience in supplying us with the data we need in order to help you.

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☐ 120 Potter Street, Cambridge 42, Mass. ☐ Condit Street, Huntington, Indiana

1. SURFACES TO BE: (Check which and submit samples if possible)
Bonded ☐ Sealed ☐ Coated ☐ Impregnated ☐ Flocked ☐

2. APPLICATION REQUIREMENTS:
Method: Brush ☐ Grid ☐ Spray ☐ Dip ☐ Knife ☐
Other ☐ (Describe)

Number of Coats:
One Surface ☐ or Both Surfaces ☐ Solvent Base ☐ Water Base ☐

Drying Conditions: Time ..... Temperature .....

Required Tack Time: Maximum ..... Minimum .....

Vulcanizing Conditions, if any:
Time ..... Temperature ..... Pressure .....

3. SERVICE CONDITIONS:
(Please note below the requirements that the bond, coating, etc. must have in order of importance, to what degree, and the test procedure involved.)

☐ Temperature Resistance
☐ Sunlight Resistance
☐ Water Resistance
☐ Solvency
☐ Permanency
☐ Bond Strength
☐ Abrasion Resistance
☐ Color of Film
☐ Flexibility
☐ Toxicity

4. ESTIMATED VOLUME PER MONTH:

Seasonal: Yes ☐ No ☐

5. Present product is now used and why unsatisfactory .....

6. PRICE LIMITATIONS:

7. REMARKS:

Company .....
Street .....
City ..... Zone ..... State .....
By ..... Position .....
Date .....

Angier Adhesives

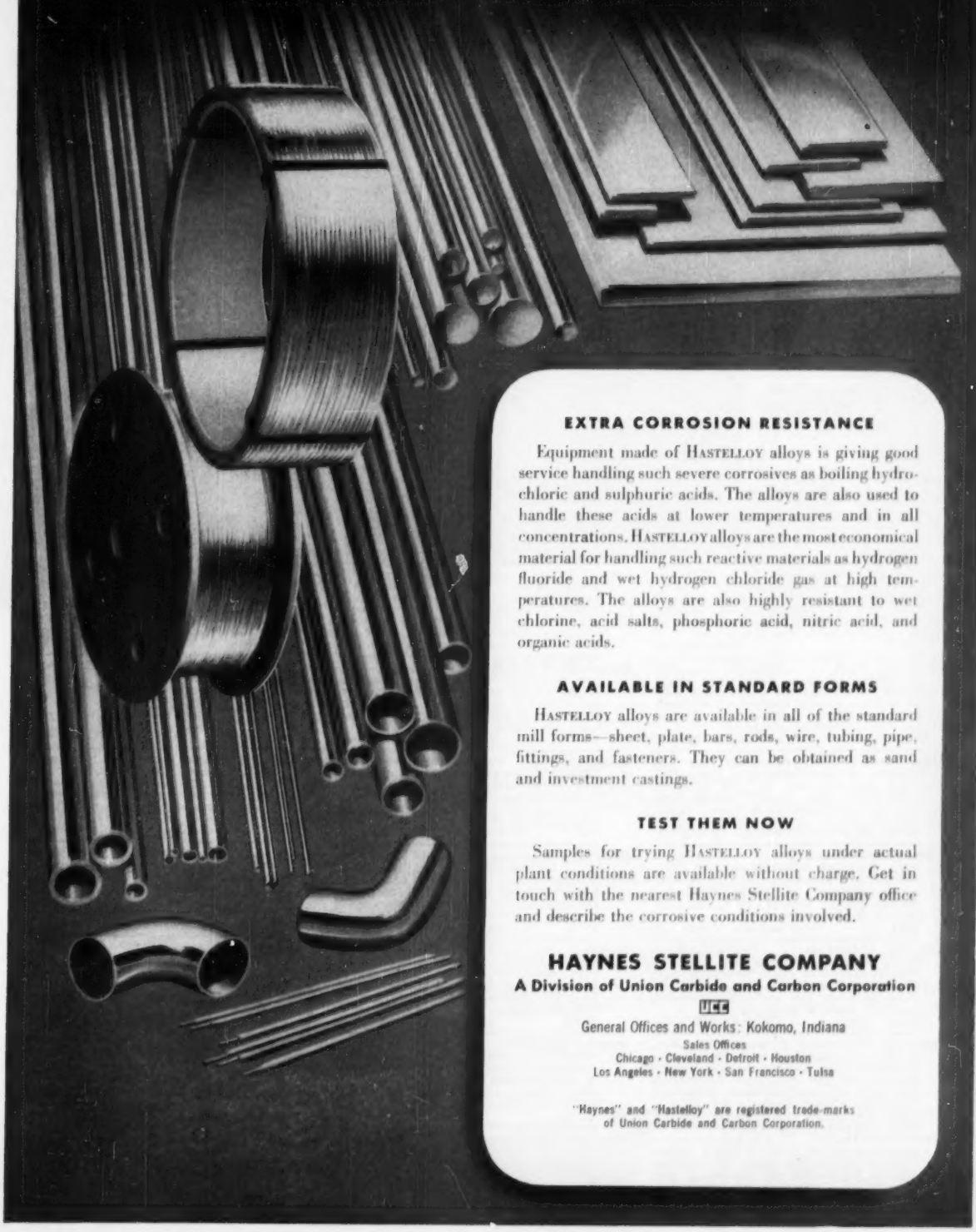
Division of Interchemical Corporation
120 POTTER STREET, CAMBRIDGE 42, MASS.
Midwestern Plant: Huntington, Indiana

formerly ANGIER PRODUCTS INC.

HASTELLOY Alloys in Convenient Forms

Trade-Mark

...for Superior Corrosion Resistance



EXTRA CORROSION RESISTANCE

Equipment made of HASTELLOY alloys is giving good service handling such severe corrosives as boiling hydrochloric and sulphuric acids. The alloys are also used to handle these acids at lower temperatures and in all concentrations. HASTELLOY alloys are the most economical material for handling such reactive materials as hydrogen fluoride and wet hydrogen chloride gas at high temperatures. The alloys are also highly resistant to wet chlorine, acid salts, phosphoric acid, nitric acid, and organic acids.

AVAILABLE IN STANDARD FORMS

HASTELLOY alloys are available in all of the standard mill forms—sheet, plate, bars, rods, wire, tubing, pipe, fittings, and fasteners. They can be obtained as sand and investment castings.

TEST THEM NOW

Samples for trying HASTELLOY alloys under actual plant conditions are available without charge. Get in touch with the nearest Haynes Stellite Company office and describe the corrosive conditions involved.

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A Division of Union Carbide and Carbon Corporation

UCC

General Offices and Works: Kokomo, Indiana

Sales Offices

Chicago · Cleveland · Detroit · Houston

Los Angeles · New York · San Francisco · Tulsa

"Haynes" and "Hastelloy" are registered trade-marks of Union Carbide and Carbon Corporation.

TECHNICAL LITERATURE

Insulation, Industrial—

Plastics, Glass-Reinforced

Insulation, Industrial.....No matter where your insulation job may be—Armstrong can give you efficient, well-integrated, on-the-job service from original specs to final installations. Booklets describe full line.
232A Armstrong Cork Co.

Insulation, Magnesia.....Revision of the "85% Magnesia Insulation Manual" with 80 p. of text, illustrations and tables has been made available. This edition (second) furnishes new engineering and product information.
232B Magnesia Insulation Mfrs.

Insulation, Pipe.....Lower heat losses, lower cost with new Snap-On glass fiber pipe insulation. Available in sizes that will fit pipe from ¼" to 33" nominal diameter, inclusive. Request Technical Bulletin SO-55.
234 Gustin-Bacon Mfg. Co.

Insulation, Pipe.....Amosite . . . the South African asbestos with long, strong, resilient fibers gives Unibestos pipe insulation greater strength and superior insulating ability. Information in Bulletin No. 109C.
232C Union Asbestos & Rubber Co.

Insulation, Pipe & Block.....Universal pipe & block insulation for all temperatures from 100° to 1600°F. Illustrated Folder shows specifications, installation details, and facts on All-temp insulation.
232D Philip Carey Mfg. Co.

Insulation, Pipe & Block.....12 p. gives full data on hydrous calcium silicate insulation for hot outdoor piping & process equipment operating at service temperatures up to 1200 F. Tells how Thermobestos is made.
232E Johns-Manville.

Insulation, Polyethylene......"Bakelite Polyethylene Insulation for Heavy Construction Power Systems," Kabelitems No. 81 includes data on the Dalles Dam Project. Cites advantages of using polyethylene insulation.
232F Bakelite Co.

Insulation, Tank.....Ultralite, the only insulation of long textile-type glass fibers, is the fastest & cheapest way to insulate heated equipment. Request samples, prices, specifications, & suggested application methods.
232G Gustin-Bacon Mfg. Co.

Irons, Cast.....Specifications for six classes of metallurgically controlled irons are itemized in new bulletin, "Precision Cast Irons." Lists both mechanical properties & tested applications. 24 p.
232H McNally Pittsburgh Foundries.

Irons, Nickel Alloy Cast.....64 p. reference features applications of "Ni-Resist" in 9 specific industries as well as in general industrial uses. Included are 96 figures, 15 tables and charts. Bulletin No. A-71.
232I International Nickel Co.

Jacketing, Aluminum.....Features: Lap-Seal insures weather-seal; heavy weight jacketing takes abuse; & new resin adhesive that makes a stronger bond between the jacketing & vapor barrier. Data & samples.
232J Childers Mfg. Co.

Laminate, Polyvinyl Chloride, Flexible-Rigid.....Entirely new Filgid was developed by Kaykor to specifically answer certain problems restricting the use of unplasticized Polyvinyl Chloride. Engrg. Bulletin FL-35.
232K Kaykor Industries.

Laminates, Plastic.....8 p. brochure discusses complete range of new industrial & decorative plastic laminates offered by Farley & Loetscher. For details on "Farlite" laminates, request Folder No. 1933.
232L Farley & Loetscher Mfg. Co.

Laminates, Resin-Bonded.....Pla-Tank resin-bonded laminate products for chemical-resistant service in metal finishing & chemical process industries. Data Sheets cover tanks, pipe, ducts, hoods, stacks, etc.
232M Chemical Corp.

Lead.....In contact with many highly corrosive chemicals, including chromic, sulfuric, sulfurous and phosphoric acids, lead reacts instantly to form an adherent and insoluble surface film. See Lead Handbook.
232N Federated Metals Div.

Lining Material, Polyvinyl Chloride..... Unlike unplasticized Polyvinyl Chloride, which is a rigid material. Vyflex L-10 is highly flexible & lends itself to lining of process & other equipment easily. Engrg. Bul. L-10.
232O Kaykor Industries.

Linings.....Describes Resilon 44 . . . a new concept—economy—convenience in corrosion-proof linings. Provides all the information on product including a table of chemical resistances. Bulletin RL-510.
232P U. S. Stoneware Co.

Linings, Drum.....Unichrome drum linings deliver resilient, seam-free, pore-free protection against such materials as acids, alkalies, salt solutions, alcohols, detergents, etc. Request descriptive Bulletin No. DL-2.
232Q Metal & Thermit Corp.

Linings, Rubber.....Acid-proof rubber linings protect equipment and processes against corrosion and abrasion. Additional information will be furnished on request. Ask for Tank Lining Cat. No. 7115.
232R Raybestos-Manhattan.

Linings, Tank.....Company offers a 12 p. booklet on its Tygon linings. Tygon's resistance to acids & alkalies permits its use in all the usual lining & covering jobs. Request Bulletin No. TL-526.
232S U. S. Stoneware Co.

Linings & Tile Tanks.....Designed & installed to meet the exact chemicals & physical requirements of each installation. Stebbins lining & tile tanks are famous for their efficiency & economy. Request Bulletin A-153.
232T Stebbins Engrg. & Mfg. Co.

Materials of Construction.....Describes five materials of construction, unique in their high resistance to corrosion: porcelain; stoneware; coatings; graphite; & alumina. Details in Bulletin No. CHE-R5.
232U General Ceramics Corp.

Materials of Construction.....Atlas offers technical advice, engineering and design assistance, highest quality corrosion proof materials and construction services. For complete details, request Bulletin MCC#5.
239 Atlas Mineral Prods. Co.

Molding Compounds, Fiberglas Reinforced.....Announces the availability of a unique fact file folder containing case histories and typical technical information on Fiberglas reinforced molding compounds. Illustrated.
232V Owens-Corning Fiberglas.

Molding Materials.....Containing 25 case histories, illustrated "Design File" serves as a convenient handbook for evaluation & use of G.E.'s rubber-phenolic molding materials. Reference No. CDC-237A.
232W General Elec. Co.

Paints, Aluminum.....Put a protective shield on rustable metal & masonry surfaces—resist corrosion from fumes & smoke—seal against moisture & rust—reflect light & heat—etc. Descriptive literature.
232X Reynolds Metals Co.

Paints, Plastic....."Seal-Kote" paint does not bubble, blister, chip or peel. Its smooth, leathery surface is practically self-cleaning & resistant to stains of oils, greases, fumes & dirt. Bulletin LL-2421.
232Y Wooster Sealkote Co.

Paints, Protective.....New catalog reference describes "Seal-Kote" vinyl plastic all-purpose paint. Profusely illustrated, it recommends "Seal-Kote" for applications around homes, farms and industry.
232Z Wooster Sealkote Co.

Paints, Protective.....Tygon "ATD" Hot Spray Paint saves you countless hours of "down time." Request the new TYGON Protective Coatings Manual for further information on these paints.
232AA U. S. Stoneware.

Plastic Sheeting, Vinyl.....Plastispray can be sprayed on building surfaces of any size or shape to form a pliable sheeting of high tensile strength & elongation. Obtain details from illustrated A.I.A. File 24-B.
232BB Liquid Plastics Corp.

Plastics.....Describes plastic properties and uses of Hercocel W, a new Hercules plastic based on high acetyl cellulose acetate. Qualifies as molding powder for many thermoplastic applications. See Data Sheet 10-55.
232CC Hercules Powder Co.

Plastics.....Describes 7 new & improved transparent plastics. These materials promise greater stability, increased safety, lower maintenance, etc. Superior properties covered & applications suggested. Illustrated.
232DD Homalite Corp.

Plastics.....Vyflex F-92 is a light, but strong, corrosion-resistant plastic that has found wide application wherever corrosion is a threat to efficient operations. Complete technical information in Engrg. Bulletin F-92.
232EE Kaykor Industries.

Plastics....."Packaging with Plastics" offers case histories of successful packaging applications, technical data on basic resins & new & unusual ideas on use of Bakelite plastics in the packaging field.
232FF Bakelite Co.

Plastics....."The ABC's of Modern Plastics" is an illustrated booklet containing basic facts on the sources and production of plastics & their growth and importance today. Copies are available on request.
232GG Bakelite Co.

Plastics.....The reinforced plastic reported on is "Polyglas", an electrically non-conductive, lightweight, and strong material that is low in cost and easy to install. Request a copy of Bulletin No. 56.
232HH Modular Plastic Corp.

Plastics, Ferromagnetic.....New set of bulletins describes Ferrotron ferromagnetic plastic materials, both in rod and tape and rigid powdered cores. Physical & magnetic properties presented in graph form.
232II Polypenco, Inc.

Plastics, Glass-Reinforced.....Presents technical data on custom-molded parts of the new ACE glass-reinforced plastics. Covers principal advantages, typical applications, properties, etc. 12 p. Bulletin No. GRP-1.
232JJ .Anderson Hard Rubber Co.

Need some equipment?

Then you'll find this issue's Inventory of New Equipment right up your alley. It's a digest of the past year's major new developments in process equipment, the first complete roundup of its kind. You'll find it a handy tool for years to come (p. 145).

What are your refractory castable problems ?

- High Temperatures?
- Abrasion and Erosion?
- Slag Attack?
- Overhead Applications?
- Insulating Properties Required?

B&W makes a wide range of specialized refractory castables. Whatever your problem, you will find helpful data in B&W Bulletin R-35. Send for your copy today.

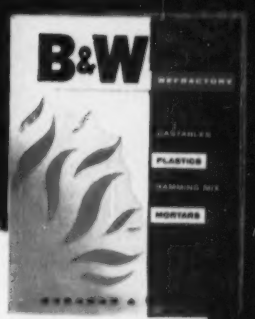


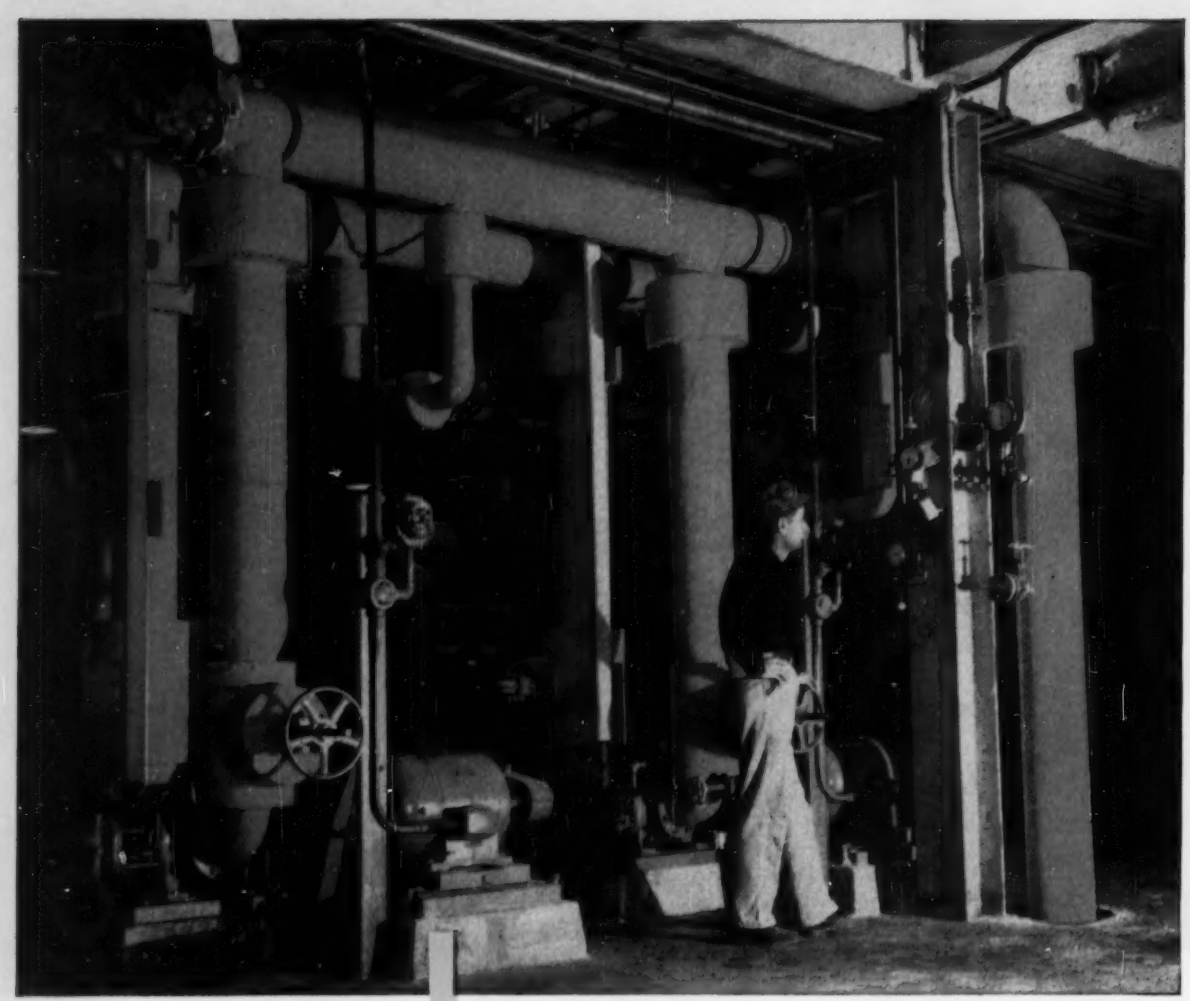
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Plant piping takes on this trim, tailored look — and in record time — when you insulate with G-B Snap*On, the one-piece molded pipe insulation of fine glass fibers. From ¾" through 33" IPS and in 3' and 6' sections depending on pipe size. With just a pocket knife and a stock of Snap*On in nesting sizes, *anyone* can make easy work of the once-tedious job of insulating bends, valves and other fittings.

To fully understand why this material saves so much time and money on fittings and straight runs you need only handle a 6-foot section of Snap*On. It's flexible, yet resilient. It's feather-light, yet tough. It's almost impossible to damage, yet easy to cut with a knife. And to these obvious advantages, you can add such unseen benefits as *permanence* and the *highest thermal efficiency of any pipe insulation on the market.*

Next time you have hot or cold piping to insulate, call your nearby distributor, listed in the Yellow Pages under "G-B Insulations." In the meantime, write today for our new 8-page brochure with full details on "the first all-new pipe insulation in 60 years."

GUSTIN-BACON *Manufacturing Company*

Thermal and acoustical glass fiber insulations • Pipe couplings and fittings • Railroad gaskets and supplies.

252 W. 10th St., Kansas City, Mo.

TECHNICAL LITERATURE

Plastics, Tooling—

Steels, Alloy

Plastics, Tooling.....Company announces the availability of an informative Mixing Chart which illustrates the amount of tooling plastic needed for a given job. "How to Figure Toolplastik Materials."
235A Rezolin, Inc.

Plates, Stainless Steel.....AL stainless steel plates in solid or clad are produced in the exact grade & surface finish required. The latest information is available in the 32 p. booklet of data on types, sizes, finishes etc.
235B Allegheny Ludlum Steel Corp.

Plating, Nickel.....Fully illustrated 16 p. bulletin, "Technical Instructions for the H-VW-M Sulfamate Nickel Plating Process," describing a versatile nickel plating process, is now available on request.
235C Hanson-Van Winkle-Munning.

Platinum, Gold & Silver.....Company announces the availability upon request of a descriptive reference entitled, "Platinum, Gold and Silver for Science, Industry and the Arts." Coded as Folder No. C-20.
235D American Platinum Wks.

Porous Mediums.....Plates and tubes with uniform porosity over entire area. Made of strong, chemically stable Alundum material, engineered for high resistance to acid and alkali conditions. Request literature.
35-8f *Norton Co.

Primers, Metal..... Bulletin describes Prufcoat "Universal Primer P-50" a heavy duty inhibitive metal primer. Includes information concerning priming properties, rust control, application, adhesion, etc. Bulletin 015B.
226d *Prufcoat Labs.

Process Equipment, Chemical.....Engineers are available to assist you in design and large, modern, facilities can meet your most difficult machining and fabrication requirements. Bulletin P-55 on request.
235E Treadwell Construction Co.

Refractories.....Carborundum has pioneered scores of super refractories with a wide variety of properties to meet your most demanding requirements. For complete details, request Refractories Booklet.
235F Carborundum Co.

Refractories.....New bi-monthly leaflet tells more about Carborundum's refractories. Makes liberal use of pictures, charts and tables to explain basic points. For details, request a copy of Vol. 1, No. 1.
235G Carborundum Co.

Refractories.....No other refractory is so chemically stable at such high temperatures under both oxidizing and reducing conditions. Includes fully detailed information on properties in Bulletin No. 1741.
35-8C *Norton Co.

Refractories.....“Refractories for the Chemical Processing Industries” discusses the selection of refractories and gives a brief description of Harbison-Walker refractories. This bulletin is available on request.
235H Harbison-Walker Refractories.

Refractories.....“Refractories in the Iron and Steel Industry” discusses available refractories, their manufacture, properties, service conditions and applications. Copies are available on request.
235I Harbison-Walker Refractories.

Refractory Grain.....24 p. reference, “Norton Refractory Grain,” offers many charts, tables and photographs in color—a wealth of information on nature, performance, and application of refractory grains.
35-8h *Norton Co.

Rubber, Chlorinated.....Company makes illustrated technical booklet available describing the many uses for maintenance paints based on Parlon (Hercules chlorinated rubber). Request a copy of this booklet.
235J Hercules Powder Co.

Rubber & Plastic Materials.....Piping, pumps, valves and tanks have a wide range of temperatures, pressure, impact resistance. For details about Ace rubber and plastic materials, request Technical Data CE-50.
235K American Hard Rubber Co.

Rubber Products.....Laboratory facilities for compound developing, fabricating techniques for producing rubber products to close tolerances, & a showing of representative products highlighted in 8 p. Brochure.
235L Goshen Rubber Co.

Rubber Products, Silicone.....Describes line of Silicone Rubber Products. Applications covered include molded & extruded parts for appliance, automotive & aircraft products as well as industrial seals. Bulletin AD147.
235M Garlock Packing Co.

Rubber, Synthetic.....How to obtain rubber products with greater resistance to deterioration described in booklet. Tells how Hypalon chemical rubber solved problems in product design & plant maintenance. 8 p.
235N E. I. du Pont de Nemours.

Sealants.....Furnishes a reference guide and chart explaining the multiple uses of special chemical sealants in a variety of industrial, manufacturing, processing, agricultural and maintenance operations.
235O Permatex Co.

Sheet, Stainless.....It has been estimated that 50% of stainless sheet applications could employ type 430. Request a copy of “Care & Use of 430 MicroRold Stainless Steel” for information.
216 Washington Steel Corp.

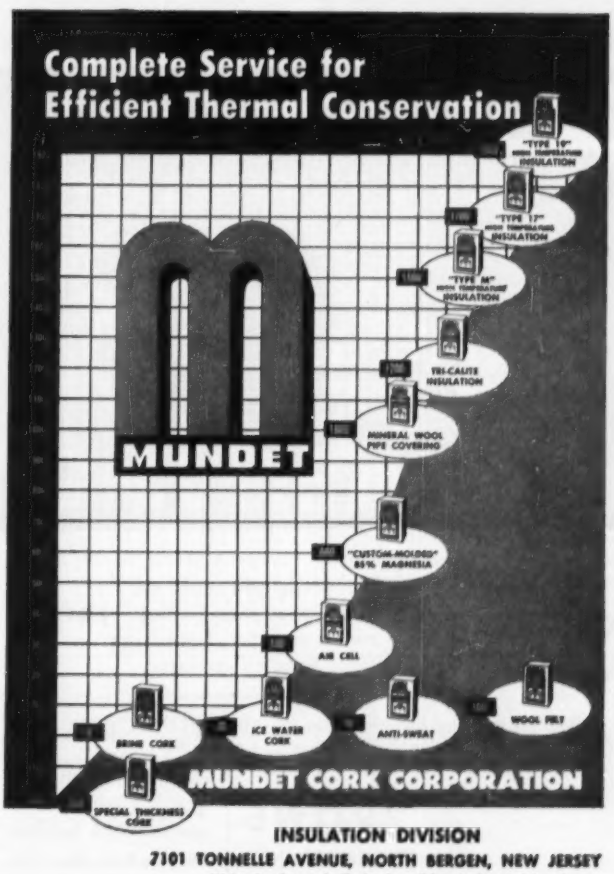
Steels.....16 p. booklet, “Special Steels for Industry,” gives details as to stainless steels, electrical materials, Carmet carbide materials, and tool steels manufactured by the organization. Contains numerous charts.
235P Allegheny Ludlum Steel Corp.

Steels, Alloy.....Here are just three of the various grades offered...Altemp A-286, S-816 & S-590. Company makes available certified laboratory data on the properties of their high temperature Super Alloy Steels.
235Q Allegheny Ludlum Steel Corp.

* From advertisement, this issue.

Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 71).



INSULATION DIVISION
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Write for latest bulletin describing Industrial Insulations

TECHNICAL LITERATURE

Steels, Alloy & Stainless— Zinc

Steels, Alloy & Stainless.....Illustrated, 102 p. includes corrosion resistant data, chemical composition, representative mechanical properties of corrosion-heat-impact-abrasion resistant alloy steels. Catalog No. 176-A.
236A Electric Steel Foundry Co.

Steels, Carbon Alloy.....Described as fastest machining leaded alloy steel in its carbon range, New Rycut 50 alloy steel is supplied in both annealed & quenched-&-tempered condition. Illustrated Bulletin 14-6.
236B Joseph T. Ryerson & Son.

Steels, Clad.....Send for fully-illustrated leaflet, "Hortonclad," describing a composite metal having an integral and continuous bond, produced by a new and revolutionary high vacuum brazing process. 4 p.
236C Chicago Bridge & Iron Co.

Steels, Nickel-Plated.....12 p. Technical Manual presents a description of CF&I lectro-clad nickel-plated products covering manufacturing techniques and fabrication procedures. Copies available on request.
236D Colorado Fuel & Iron Corp.

Steels, Rubber Lined.....Ace rubberlined steel . . . strength & pressures of steel plus chemical resistance of hard rubber. Excellent for alkalis, most inorganic acids, many organic acids, etc. Bulletin CE-52.
236E American Hard Rubber Co.

Steels, Specialty.....32 p. illustrated guide to specialty steels made available to all steel users. Defines distinctive characteristics of a broad range of special purpose steels in terms of end use.
236F Carpenter Steel Co.

Steels, Stainless.....Makes available valuable reference, "AL Stainless Steel in Chemical Processing"—36 p. on various applications, advantages, etc. of stainless in the chemical industry. Request your copy.
227d Allegheny Ludlum Steel Corp.

Steels, Stainless.....'Stainless Steel Handbook"—a case-bound book of 124 p., containing complete data leading to proper selection and fabrication, etc. of the correct grade of stainless for each application.
227a *Allegheny Ludlum Steel Corp.

Steels, Stainless.....Covers superior stainless steel sheets, strip, bars plates, wire, forgings, etc. Data in informative 44 p. booklet, "Making the Most of Stainless Steels in the Chemical Processing Industry."
236G Crucible Steel Co. of America.

Steels, Stainless.....'Fabrication of Stainless Steels" contains valuable data for your shop men on various methods of handling, forming and finishing stainless steel. Bulletin is available upon request.
227b *Allegheny Ludlum Steel Corp.

Steels, Stainless.....16 p. illustrated booklet describes the physical properties and analysis, relative corrosion resistance, fabrication, application and care of MicroRold Type 430 nickel-free stainless steel sheet.
236H Washington Steel Corp.

Steels, Stainless.....An individual Blue Sheet, containing certified laboratory data on physical and chemical properties, etc. is available on each grade of AL Stainless Steel. Information upon request.
227c *Allegheny Ludlum Steel Corp.

Steels, Stainless.....Carlson's weekly stock lists are your guide to what's available in quality stainless steel. You can buy for quick delivery exactly what you need in stainless steel plate—sheared, sawed, etc.
219 *G. O. Carlson, Inc.

Surfacing, Floor.....Newest advancement in continuous search for better corrosion-proof materials — offers greater protection than conventional acid-proof floor materials. Brochure & sample of Corocrete on request.
236I Cellcote Co.

Tantalum.....Tantalum is immune to hydrochloric acid, nitric acid, bromine, iodine, chlorine and many others. It is strong, immune to thermal shock, unequalled in heat transfer efficiency. See Tantalum Booklet.
236J Fansteel Metallurgical Corp.

Titanium.....'Facts About Titanium" contains a list of commonly available titanium alloys & their compositions, forming & welding methods, heat treatment & machining data, current & projected prices, etc.
236K Arthur D. Little.

Titanium.....Titanium "top-hat" thwarts corrosion damage. Fits snugly into top of condensers. Data on application and fabrication of titanium alloys in descriptive Rem-Cru Review.
236L Rem-Cru Titanium.

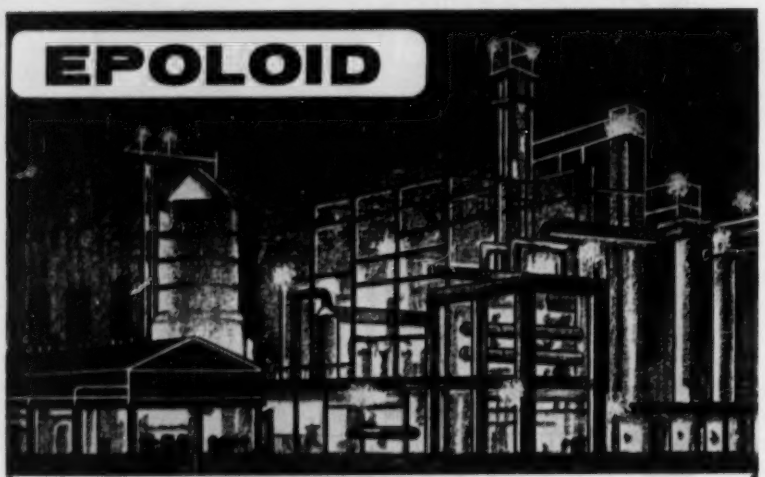
Titanium Sponge.....Resists chlorides & other corrosive chemicals as no other structural metal can. Offers general booklet on titanium plus new technical bulletin with data on corrosion-resistant properties.
225 E. I. du Pont de Nemours.

Wire Products.....'The Cambridge Wire," published quarterly, gives news of latest developments and applications of woven wire products. Also offers literature on conveyor belts, wire cloth & fabrications.
236M Cambridge Wire Cloth Co.

Wire Rope.....New 24 p. bulletin gives wire rope recommendations for industrial services. Each recommendation covers such points as rope diameters, construction, grade & core. Bulletin DH-129D.
236N American Chain & Cable Co.

Zinc.....Illustrated 32 p. reference describes how zinc controls corrosion, lengthens life of steel products & reduces cost. Includes drawings, charts, photos, characteristics, building applications, etc.
236O **American Zinc Institute.**

* From advertisement, this issue.



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Base, Motor

Maintains tension under all load conditions. (237A)

. . . A new inexpensive motor base automatically compensates for belt stress and maintains exact belt tension for all load conditions. The greater the load, the greater the belt tension. Wear on both belt and bearings is reduced.—*Lovejoy Flexible Coupling Co., Chicago, Ill.*

Belt, Non-Slip

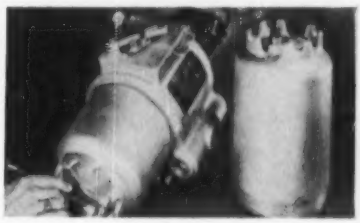
Better transmittal motion (237B)

. . . A new non-slipping belt employs a herringbone-indexing design to transmit rotational motion with great accuracy. It works over the same range of ratios as gear drives.—*Electromation Co., Burbank, Calif.*

Breather

Boosts air flow in explosion-proof housings. (237C)

. . . Flow of ventilating air through explosion-proof housings is tripled or quadrupled by the new stainless steel universal breather and drain. Large air passages prevent clogging by dust or small dirt particles. Units can be installed by screwing them into hubs or holes tapped for conduit having five or more threads.—*Crouse-Hinds Co., Syracuse, N. Y.*



Closer, Press

For existing presses. (237D)

. . . Work for closing filter presses is minimized through use of the Handraulic closing device. This manually operated hydraulic device provides a high power-to-work ratio with maximum pump leverage and pressure gage control. It can be installed on existing presses without alterations, reboring or removal of any plates.—*D. R. Sperry & Co., Batavia, Ill.*



Conduit, Panel

Reduces wiring time. (237E)

. . . A new type control-panel conduit features an exclusive slot design to reduce wiring time to a minimum. Wires can be inserted or removed from the conduit merely by snapping in or out of the slot. Design permits lugs to be attached before wire is inserted and allows the wire to be removed with lugs attached.—*Panduit Co., Chicago, Ill.*

Conduit, Wiring

Protected against destructive environment. (237F)

. . . A tough, waterproof, synthetic cover protects Type U20SCB and U20SCG conduit against moisture, dirt, oil, fumes, chemicals. The flexible metal conduit can be used for making connections in tight places, for connecting wires on machinery that operates in oil or moisture, and for use under extreme vibration.—*Universal Metal Hose Co., Chicago, Ill.*

Connector

For flexible conduits. (237G)

. . . Liquid-tight flexible conduit connector is now available for diameters of 2½, 3 and 4 in. The fitting will accommodate any flexible conduit spiral because of integral, threadless grounding cone. It may be installed without disassembling.—*Thomas & Betts Co., Elizabeth, N. J.*

Couplings, Chain

For postive, direct coupling of shafts. (237H)

. . . Flexible, Taper-Lock chain couplings permit sufficient relative movement between the hubs to accommodate slight angular and parallel shaft misalignment. Utilizing Taper-Lock bushings, these new couplings can be installed upon full size or normally undersized shafts, yet they provide the equivalent of a shrink fit.—*Dodge Mfg. Co., Mishawaka, Ind.*

Coupling, Flexible

Can be removed radially. (237I)

. . . For centrifugal pump and similar coupling applications the new C-R coupling permits easy assembly and disassembly because it can be removed radially. Special cushions are cut so that they are held by a standard Type C collar when the coupling is assembled. By sliding the collar, the cushions can be removed easily.—*Lovejoy Flexible Coupling Co., Chicago, Ill.*



Drive, Agitator

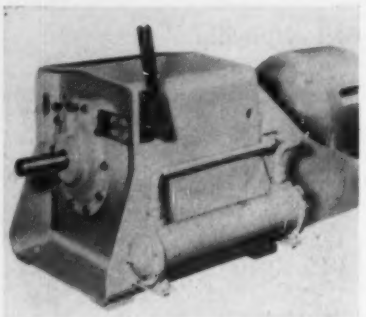
For slow speed with no contamination. (238A)

. . . The new Little Giant agitator drive unit is recommended for stirring or agitating liquids slowly and positively without danger of contamination. It will meet rigid sanitary requirements set in food processing. Fits all standard agitators.—*Little Giant Products, Inc., Peoria, Ill.*

Drive, Fluid

For no-load starting, torque-limiting control. (238B)

. . . A new line of enclosed, self-contained fluid drives transmit power smoothly through a stepless speed control. Speed is adjustable over a wide range on both variable and constant torque loads with this type VS, Class 2 Gyrol fluid drive. Units are designed for dual rotation. Fluid drive and load can be reversed while in motion by reversing input rotation when used with an electric motor. Units are available in six sizes from 7.5 to 800 hp. for speeds up to 1,800 rpm.—*American Blower Corp., Detroit 32, Mich.*



Drive, Gear

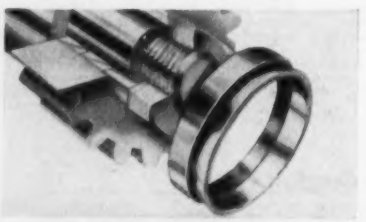
For heavy in-line duty. (238C)

. . . A completely new line of in-line helical gear drives combines standardized design with the ability to withstand heavy duty service. The drives have one-piece cast-iron housings with reliable oil seals at the shaft openings to prevent oil leakage.—*Link Belt Co., Chicago, Ill.*

Keyway Replacement

Fastens hub to shaft. (238D)

. . . Through a new approach, the Gripspring device fastens a hub to a shaft without using spline or keyway. It is wedged between hub and shaft by applying heavy pressure with easy-to-use hand tool. The outer ring expands, the inner ring contracts. Gripspring transmits maximum torque for given shaft dia.—*U. S. Automatic Corp., Amherst, Ohio.*



Movers, Equipment

Operate like oversized roller skates. (238E)

. . . Merely by bolting Mighty Movers onto heavy machinery, it can be moved quickly and safely. Furnished as sets of four, these dollies can transport loads up to 90 tons. Each one is 9 in. long, 5 in. high and wide and each weighs 40 lb.—*Mighty Mover Co., Denver 10, Colo.*

Pulleys, Variable Speed

Simplicity lowers cost. (238F)

. . . Variable speed pulley rated for ¾ hp. offers simple design for low cost and maintenance. Oil-impregnated bronze bearings eliminate need for lubrication. Pulley delivers 2¾ to 1 speed ratio using an "A" belt, can be reverse mounted.—*Lovejoy Flexible Coupling Co., Chicago, Ill.*

Purifier, Exhaust

Handles leaded gasoline line exhaust. (238G)

. . . The Oxy-Muffler removes by catalytic burning as much as 90% or more of the carbon dioxide and most of the aldehyde and hydrocarbon fumes in engine exhaust. Said to be the first catalyst exhaust purifier that can be used on leaded gasoline, it also works on unleaded. Efficiency holds up for at least 600 hr. of operation, equivalent to about five months' fork lift truck use in many plant operations.—*Oxy-Catalyst, Inc., Wayne, Pa.*

Reducer, Speed

Available in units for heavier jobs. (238H)

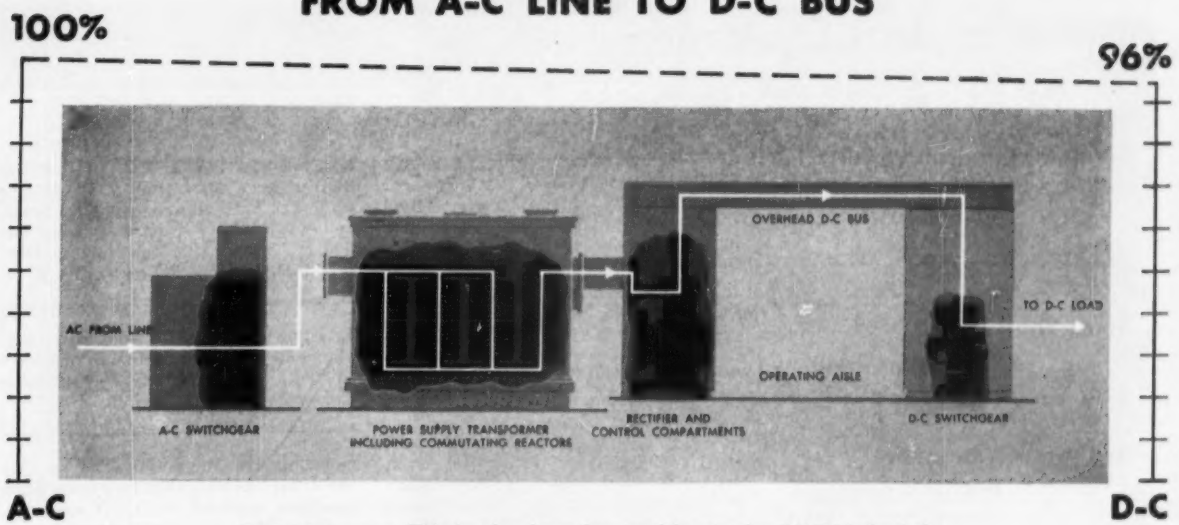
. . . With two new models, maximum rated horsepower of the Torque-Arm line of speed reducers has been boosted 40%. Line offers capacities from 1 to 60 hp. with output speeds from 12 to 365 rpm. New No. 8 model with 60-hp. capacity can be mounted on shafts up to 5-in. dia. It needs no foundation, flexible couplings, sliding base.—*Dodge Mfg. Corp., Mishawaka, Ind.*

Reducers, Speed

Simple, compact design, durability. (238I)

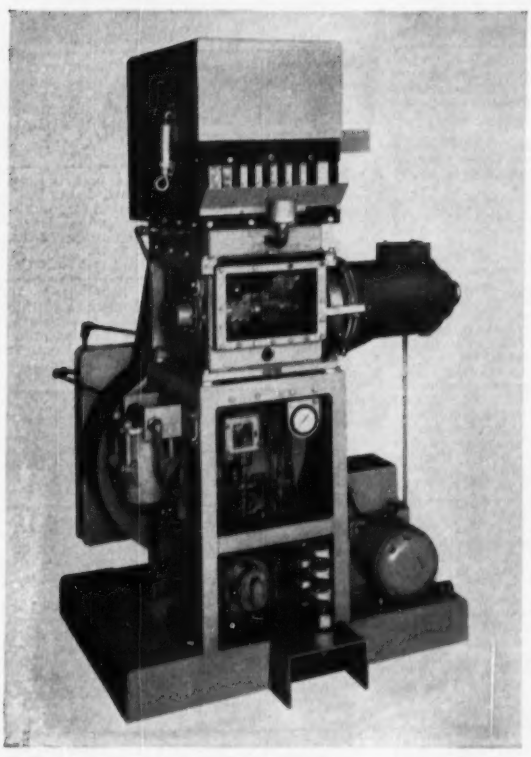
. . . The gear design and the construction of the new Line-O-Power reducer provides higher capacities in a compact unit. The input and output shafts are in a direct line to permit the motor and the speed reducer to be coupled in less space. An exclusive pinion facilitates changing reduction ratios.—*Foote Bros. Gear & Machine Corp., Chicago, Ill.*

FROM A-C LINE TO D-C BUS



Here's what you get. This drawing shows the essential parts of an I-T-E Mechanical Rectifier. Simple, compact equipment—easy to install, inexpensive to maintain.

POWER COST SAVINGS UP TO THOUSANDS OF DOLLARS A YEAR



I-T-E Mechanical Rectifier operates at efficiencies of 96%—and higher!

The more d-c electricity you use in your manufacturing processes, the more you can save in the cost of your power if you have an I-T-E Mechanical Rectifier.

In case after case, I-T-E Mechanical Rectifiers have turned in efficiency performances of 96% and higher. Power losses are inherently lower. Contacts are pure solid silver—the best conductor known. Besides saving power, an I-T-E Mechanical Rectifier also saves you space, installation cost, and maintenance cost.

An I-T-E Mechanical Rectifier saves enough in power to fully pay the amortization costs on the equipment.

I-T-E Mechanical Rectifiers are available in single units—6000 through 12,000 amp and 24,000 amp from 50 to 250 volts d-c; 6000 amp and 12,000 amp from 250 to 400 volts d-c. For information, write I-T-E Circuit Breaker Company, Transformer and Rectifier Division, 19th & Hamilton Sts., Philadelphia 30, Pa.

The contact mechanism. This is the heart of the I-T-E Mechanical Rectifier. Synchronous motor drives silver contacts. Switching is done during interval when current is held at zero by reactors.

I-T-E CIRCUIT BREAKER COMPANY • Transformer and Rectifier Division

Mechanical Equipment

Seal, Mechanical

Completely assembled ready to install. (240A)

. . . Just announced for use on rotary shafts is the BB-21A Mechanipak seal for pressures up to 150 psi. These mechanical seals are said to save money by eliminating wear on shafts and shaft sleeves, stopping fluid leakage, reducing down time and cutting maintenance costs. For temperatures up to 212 F., shell and washer is brass, bellows is Buna-N or neoprene; for 400 F., 50 psi., silicone bellows.—*Garlock Packing Co., Palymyra, N. Y.*

Seal, Shaft

For high temperature service. (240B)

. . . A new rotary mechanical shaft seal has been designed to handle hot oils or water up to 800 F. Design is simple and easy to install on new or existing equipment. The new seal allows for thermal expansion to assure efficient performance.—*Durametallic Corp., Kalamazoo, Mich.*

Separator, Magnetic

More powerful magnet removes iron. (240C)

. . . Now standard on all Eriez drum separators is a more powerful magnetic element, at no appreciable change in cost. New element provided deeper, more intense magnetic fields so that the drum has high efficiency even when handling extreme depths of material. —*Eriez Mfg. Co., Erie, Pa.*

TECHNICAL LITERATURE

MECHANICAL EQUIPMENT

Bearings, Roller.....New 72 p. Catalog contains specification and data pages on all models of Shafer units. Shaft sizes range from 2" to 7". Includes new load rating tables and engineering data. Catalog 55.
240D Chain Belt Co.

Belts, V-.....Links are quickly joined by easy-to-use cup-washers & T-screws to make up individual belts. Easiest v-belt to couple & uncouple. Lasts longer—more flexible. Request Veelos TD & TE Catalog.
240E Manheim Mfg. & Belting Co.

Belts, V-.....Four reels of Veelos adjustable v-belt replace up to 316 different sizes of endless belts—& take up a space of only 16 in. square. Veelos Data Book contains valuable engineering data.
240F Manheim Mfg. & Belting Co.

Belts, V-.....Complete line of Maurey Mor-Grip fractional horsepower & heavy-duty multiple v-drive belts are described in a 3-color, 24 p. Catalog. Includes construction & applications. Catalog v-55.
240G Maurey Mfg. Corp.

Belts, V-.....Information on line of sealed-life V-belts is offered in bulletin. Construction details and complete data on size, pitch lengths and outside lengths. For complete information, request Bulletin A606.
240H Dodge Mfg. Corp.

Brakes, Magnetic Disc.....New through-shaft magnetic disc brake incorporates the advantages of solenoid operation. The design of the unit permits drives off both ends of the shaft. Request Bulletin No. 2802.
240I Stearns Magnetic.

Casters.....New 4 p. catalog shows full line of Rapidstan casters. Describes exclusive features of Steel Forged, Cold Forged and Stamped Steel from light to heavy duty, and recommends uses. "Condensed Caster Catalog."
240J Rapids-Standard Co.

Casters & Wheels.....Featuring Darnel-loprene treads (a soft resilient Neoprene rubber compound) . . . casters offer ease of movement, quietness, and protection for floors. Manual contains complete information.
240K Darnell Corp.

Chain, Roller.....Adaptable to power transmission or conveying. Positive, flexible, economical chain with high sustained efficiency. Lock-type bushings result in long roller chain life. 148 p. Data Book 2457.
240L Link Belt Co.

Closures.....Sillers Flex Ring closures are simple and safe to operate. Faster access to the inside of pressure vessels or piping. Company makes available a catalog describing their line. Request Bulletin 3000.
240M Sillers Engrg. Co.

Cutters, Tube.....Describes a new push-type internal tube cutter . . . a time-saving maintenance tool that may be used with your present air or electric motor to cut non-ferrous tubes. Literature and data.
240N Airetool Mfg. Co.

Drives.....8 p. illustrated catalog and selection guide describes the new Type VS Class 2 Gyrol Fluid Drive . . . for general purpose industrial applications. Request you copies of Bulletins Nos. 9419 and 9519.
240O American Blower Corp.

Drives.....Describes the Cleveland Speed Variator—a simple, compact drive that provides infinitely variable output speed over a range up to 9:1 from a constant speed power source. Illustrated Bulletin K-200.
240P Cleveland Worm & Gear Co.

Drives.....Available 1-75 H. P. for all service classes . . . horizontal, vertical, and vertical extended with foot or flange mounting. Company makes new "Line-O-Motor" Catalog available on request.
240Q Foote Bros.

Drives, Belt.....The Little Giant Agitator Drive Unit is useful in any application where liquids must be stirred or agitated slowly and positively, and where there must be no contamination. Request details.
240R Little Giant Products.

Drives, Control.....New, small, piston-operated Bailey Control Drive will improve flow characteristics of butterfly valves, dampers, hydraulic couplings, feeders, etc. Specs. Nos. P81-1 and P81-5.
240S Bailey Meter Co.

Drives, Dry Fluid.....Flexidyne easily handles difficult starting problems, and gives a new kind of protection against shock and overloads. For complete product information, request company's Bulletin No. A-640.
240T Dodge Mfg. Corp.

Drives, Gear.....Describes the U. S. Holloshaft right angle gear drive . . . for non-electrical locations. Ruggedly designed for continuous duty. Profusely illustrated reference covers all outstanding features. Form F-1775.
240U U. S. Elecl. Motors.

Drives, Shaft-Mounted.....These versatile, speed-reducing units save space, power, material, and time. Includes selection, application, and dimension details in the new, completely illustrated, engineering Bulletin.
240V Falk Corp.

Drives, Silent Chain.....88 p. brochure offers detailed engineering data. Covers design and application information, drive components and accessories, operational and technical data, etc. Request Book No. 2425.
240W Link-Belt Co.

Drives, V-Belt.....Fully illustrated, 36 p. booklet, entitled "Modern Multiple V-Belt Drives," discusses the origin, history and development of the modern multiple V-belt drive. Request your copy of Bulletin No. 20E8297.
240X Allis-Chalmers Mfg. Co.

Drives, V-Belt.....Issues 74 p. booklet carrying handy multi-color tables for quick & easy selection of constant speed "Texrope" V-belt drives. Also covers design features, basic drive principles, etc. Tex-Book 20P40.
240Y Allis-Chalmers Mfg. Co.

Drives, Valve.....Designed to meet the needs of oil, gas, chemical, water, sewage, and other types of installations. Twelve assembly positions are available, with standard gear ratios. Brochure.
240Z Janette Electric Mfg. Co.

Drives, Variable Speed.....Announces an all-new infinitely variable speed transmission designed to provide extreme accuracy of speed adjustment above and below the input speed. Bulletin Nos. 519 and 900.
240AA Graham Transmissions.

Drives, Variable Speed.....Booklet includes selection tables for A, B, C & D section variable speed drives, information on design features, drive principles, and accessory equipment. Bulletin 20P50.
240BB Allis-Chalmers Mfg. Co.

1956 INVENTORY

Engine-Gear Sets.....Announces the publication of a new 8 p. booklet, "Nordberg Supairthermal Engine-Gear Set...for Driving Centifugal Compressors & High Speed Pumps." Illustrated Bulletin No. 237.
241A Nordberg Mfg. Co.

Expanders, Tube.....No. 255 for average sheets and No. 270 for thick or multiple sheets. Tube expanders are recommended for use with any controlled rolling motor for uniform expansion of tubes. See Bulletin.
241B Gustav Wiedeke Co.

Expanders, Tube.....Announces new General Catalog on tube expanders, cutters & accessories for fire tube boilers, water tube boilers, condensers, coolers & heat transfer units. Request your copy of Catalog 81.
241C Gustav Wiedeke Co.

Expanders, Tube.....Advantages: uniform & tight pressure joints; no over-rolled or under-rolled tubes; extended tube expander life; more production & higher profits. For more information, request Bulletin 55.
241D Thomas C. Wilson.

Fasteners.....New revised 30 p. catalog carries tables showing size ranges and specifications such as number of threads per inch and length. Request your copy of the revised Unbrako Standards catalog.
241E Standard Pressed Steel Co.

Fasteners, Stainless.....Comprehensive reference lists stainless fasteners available, including style & size data about stainless screws, bolts, nuts, washers, rivets, etc. Request copy of Bulletin No. P6A.
241F Allmetal Screw Products Co.

Gaskets.....Spirotalic gaskets hold their seal because they are made of spirally wound interlocking plies of asbestos & spring-like metal strip. Gaskets compress easily with light bolting. Catalog PK-35A.
241G Johns-Manville.

Gaskets.....Do not show any signs of creeping or distress at 1650 psi steam pressure—850° F. Gaskets come in all sizes and shapes. Details on asbestos sheet packing and gaskets, in Bulletin CE46.
241H Durabla Mfg. Co.

Gaskets.....Garlock 662 gasket material . . . cuts easily, and gaskets will not change shape or shrink in storage under varying climatic conditions. Withstands temperatures up to 300° F. For details, see Bulletin AD 146.
241I Garlock Packing Co.

Gaskets & Adaptors.....U. S. Gasket Company offers free literature on their Chemiseal Snap-on Type 820 Gaskets and Adaptors No. 2-CRS. For complete information, request Catalog No. TG-953.
241J U. S. Gasket Co.

Gaskets, Teflon.....The ideal seal for many process applications is a Flexitallic gasket with teflon trapped between edges of stainless steel. For complete data request folder, "Teflon in Flexitallic Gaskets."
241K Flexitallic Gasket Co.

Gaskets, Teflon-Jacketed.....Fully illustrated reference covers Chempro's lines of teflon jacketed gaskets, solid ring gaskets, teflon expansion joints and special teflon gaskets. Request Bulletin No. CP553.
241L Chemical & Power Products.

Gears.....Gear Manual includes 76 p. of illustrations, diagrams, definitions, tables, charts & explanations regarding all types of gears. Also a simplified method of calculating hp ratings. Catalog G-655.
241M Philadelphia Gear Wks.

Lubrication Systems.....“Spray Valve Panels” are designed to spray-lubricate bull gears, girth gears such as on grinding mills & kilns, & other spur or herringbone gear trains. Details in Bulletin No. 26-R.
241N Farval Corp.



BEFORE installing Chempro Lubricated Seals, the F. & M. Schaefer Brewing Co., Brooklyn, N. Y., experienced high packing and shaft replacement costs on their caustic soda pumps. Although carefully screened, minute particles of grit, aluminates from labels, and pulverized glass were carried back to the pumps. These highly abrasive particles lodged between the shaft and packing, not only chewing up the packing after a few weeks, but causing severe scoring of the shaft, necessitating frequent shaft replacement.

The first Chempro Style WLC Lubricated Seals were installed on Schaefer's caustic soda pumps in May, 1955, and have given more than 12 months of leak-free service. A Chempro Flushed and Lubricated Seal installed in December, 1955, on an Ingersoll-Rand Type 3GRVL pump has given the same trouble-free service in pumping highly abrasive caustic soda and diatomaceous earth solutions for reprocessing in a filter press.

Chempro Seals are giving highly economical service on pumps handling acids, alkalis, solvents and other chemical liquids and slurries under a wide range of operating conditions. Our engineers will be glad to recommend the Chempro Seal to meet your particular needs.

Advantages: Completely Interchangeable with Packing Simple in Design • Chemically Inert Chempro Teflon† Packing Low Power Costs • External and Internal Seals Available Arranged for Lubrication, Flushing and/or Conditioning.

Write for Seal Bulletin 551

*Patented † du Pont trademark

CHEMICAL & POWER PRODUCTS, INC.
The Original Fabricators of Teflon Packings and Gaskets
5 Broadway, New York 4, N. Y.

TECHNICAL LITERATURE

Machinery Parts, Alloy—

Turbines, Steam

Machinery Parts, Alloy.....Illustrated, 28 p. describes machinery parts made of Haynes alloys that have been used under difficult service conditions to assure long, satisfactory machine operation. Book F-7158-A.
242A Haynes Stellite Co.

Packings.....For air compressors, split-case metal packings feature two big advantages: long, trouble-free life; can be installed without disconnecting the rod. Complete information contained in Bulletin 2889.
242B Garlock Packing Co.

Packings.....Definite savings in maintenance cost . . . when you use spiral or die-molded ring packings. Means long uninterrupted sealing service with less wear on rods, shafts, sleeves or stems. Bulletin File DMCE.
242C Durametallic Corp.

Packings.....Belmont "centrifugal" type 754-P is a "custom-made" packing for centrifugal and rotary pumps that protects pump shafts against scoring, wear. Request Catalog on "custom-made" packings.
242D U. S. Gasket Co.

Packings, Carbon.....The application of carbon "Paragrid" packings to all problems of absorption, scrubbing, distillation, gas cooling, etc., offers numerous advantages. For details, see brochure, Ref. C7/54.
242E Powell Duffryn Carbon Prod.

Packings & Gaskets.....J-M Chempac-Interlocked packing combines both teflon and asbestos protection . . . resists virtually all chemicals. Descriptive reference furnishes complete data. Folder PK-80A.
242F Johns-Manville.

Packings & Gaskets.....8 p. bulletin features a wide variety of R/M Packings & Gaskets made of "Teflon." Includes available sizes & service recommendations. Available upon request —Form. No. 6906.
242G Raybestos-Manhattan.

Packings, Pump.....Chemiseal centrifugal pump packing . . . for all-chemical service is made in two types—pure duPont teflon and teflon with graphite. Complete details contained in Catalog TP-1255.
242H U. S. Gasket Co.

Packings, Ring.....Furnishes complete descriptions of the Chempro lines of teflon ring packings, teflon impregnated asbestos packings, V-type packings and the patented, teflon seal cage. Bulletin No. CP552.
242I Chemical & Power Products.

Packings, Saddle.....Packs without "nesting", surface area is exposed area, more uniform free space, better liquid distribution, better drainage, less weight. Full technical data in Bulletin S-29.
242J U. S. Stoneware.

Packings, Sheet Rubber.....Valuable pamphlet describes in detail, recommended applications, available sheet and sizes, of a new line of packing material . . . designed to cure rubber continuously. 4 p.
242K Boston Woven Hose & Rubber.

Packings, Teflon.....Chemlon Yarn Style C-30 extra tough packing provides valuable advantages. It can be used to handle the most destructive acids, alkalis or solvents. For details, request Bulletin No. P-221.
242L Crane Packing Co.

Packings, Tower.....Illustrated Folder describes Tellerette . . . a new polyethylene tower packing based on the principle of interstitial hold up. Feature increased efficiency & capacity, lighter weight, etc.
242M Harshaw Chem. Co.

Power Transmission, Mechanical..... Offers an illustrated 60 p. Engrg. Bulletin—for the instruction of Standard's representatives in the correct selection & application of petroleum products. Bulletin No. MP-212.
242N Standard Oil Co.

Pulleys, Variable Speed.....Product advantages, operating principles, installation procedures and specifications of the new Hi-Ratio variable speed pulleys are listed in a new, fully illustrated Brochure.
242O Equipment Engrg. Co.

Rectifiers, Mechanical.....I-T-E mechanical rectifier operates at efficiencies of 96%—and higher. Saves you power, space, installation cost, and maintenance cost. Company makes further information available.
239 *I-T-E Circuit Breaker Co.

Reducers, Motor.....Motors can be interchanged or replaced in minutes with the all-steel Falk motoreducer. Replacement is not limited to original make of motor. For more information, request Bulletin No. 3100.
242P Falk Corp.

Reducers, Speed.....Feature all advantages of shaft-mounting . . . all proven performance & economy features of Dodge Torque-Arm speed reducers—available for your big jobs. Bulletin offers details.
242Q Dodge Mfg. Corp.

Reducers, Speed.....Describes versatile, Straight Line all-steel speed reducer (concentric type). High & low speed shafts suitable for v-belt, gear or chain as well as coupling connections. Bulletin 1104.
242R Falk Corp.

Reducers, Speed.....Prove the difference in worm gear speed reducers yourself. For details on Cone-Drive gearing's double-enveloping design and specifications, company makes Bulletin 600C available on request.
243 *Michigan Tool Co.

Reducers, Speed.....40 p. covers "Line O-Power" speed reducers with capacities ranging from fractional hp to 150 hp. Includes complete engineering data & specifications for all models. Engrg. Manual LP.
242S Foote Bros. Gear & Mach.

Reducers, Speed.....Take up a minimum of space. Power is transmitted with a smooth, uniform torque flow. Found throughout the chemical & allied industries where a right-angle drive is needed. Catalog 400.
242T Cleveland Worm & Gear Co.

Reducers, Speed.....Company offers a catalog on its line of worm gear reducers . . . for horizontal or vertical mounting; with worm above or below worm gear; etc. Request Catalog WG-51.
242U Philadelphia Gear Wks.

Reducers, Vertical Speed.....The unique single casing and bolted-on motor construction makes mounting and installation simple and it eliminates base plates and couplings. For details on MotoReducer—Cat. MR-54.
242V Philadelphia Gear Wks.

Reduction Units, Speed.....New 100 Series Reductors are standard stock gear reduction units made in a full range of models and ratings for virtually all drive needs. Details in bulletin, "100 Series Reductors."
242W Boston Gear Wks.

Rims, Sprocket.....Operation of overhead valves solved thru use of Babbitt adjustable sprocket rim with chain guide. Fits any valve wheel—quickly installed—low in cost. Offers descriptive product literature.
242X Babbitt Steam Specialty Co.

Saddles, Intalox.....16 p. reference offers full technical data and specifications on Intalox Saddles, including comparative charts showing relative pressure drops, flooding limits, gas pumping costs, etc.
242Y U. S. Stoneware Co.

Seals, Balanced Pressure.....8 p. reference describes rotary type fluid seals, with complete installation and design data and some typical installations. Includes detailed diagrams and tables. Bulletin No. 7.
242Z Sealol Corp.

Seals, Lubricated.....Give economical service on pumps handling acids, alkalis, solvents & other chemical liquids & slurries. External & internal seals available; for lubrication, flushing, and/or conditioning. Bulletin 551.
241 *Chemical & Power Products.

Seals, Mechanical.....Company announces a mechanical seal . . . specifically designed for use on rotary shafts at pressures up to 150 psi. Data, including drawings, charts & diagrams, in Bulletin AD-150.
242AA Garlock Packing Co.

Seals, Mechanical.....Describes a new series of Unitary mechanical seals . . . designed for use on rotary shafts of boiler feed pumps, chemical pumps, oil refinery pumps, etc. Illustrated Bulletin No. AD-151.
242BB Garlock Packing Co.

Seals, Mechanical.....BJ makes reliable high-precision seals in material & construction combinations to answer almost any pressure, temperature & liquid requirements. Information in Bulletin No. 54-1-10,000.
242CC Byron Jackson Div.

Seals, Mechanical.....Flexibox mechanical seal features numerous advantages: extreme simplicity; great sturdiness; low cost; universally adaptable; etc. For information, request illustrated Bulletin No. 10.
242DD Sealol Corp.

Seals, Mechanical.....For meeting severe sealing conditions. Pressures from 50 psi to 1000 psi . . . Temperatures from minus 80° F. to 450° F. For data on applications, request Dura Seal Catalog 455-CE.
242EE Durametallic Corp.

Seals, Mechanical.....Combining chemically impervious teflon with a balanced bellows design—Chemiseal external mechanical seals last longer & give unsurpassed performance. Details in Bulletin No. MS-1155.
242FF U. S. Gasket Co.

Seals, Mechanical.....Reduce your liquid handling costs with types 1 & 2 to type 9 seal, that can be adapted to your individual conditions. Company makes detailed information available in its Seal Catalog.
242GG Crane Packing Co.

Seals, Mechanical, Rotary.....Company announces the availability of a new 8 p. reference which shows how you get maintenance-free sealing that slashes fluid mixing cost to a new low. Illustrated Bulletin B-111.
Cov-4a Mixing Equipment Co.

Seals, Selector.....The new Sealol Flexibox Sealector enables you to decide on seal type size and materials for your specific requirements. Covers 48 typical products handled in the process industries. Request Sealector.
242HH Sealol Corp.

Seals, Shaft.....Sealol's wealth of design & manufacturing experience assures users of chemical agitators & mixers of the best in seals. Complete engineering information and recommendations upon request.
242II Sealol Corp.

Seals, Shaft.....Teflon wedge shaped sealing member is impervious to chemicals and solvents—permits high temperature service to 500° F. For complete details on the Type 9 Shaft Seal, request Bulletin S-205-2.
242JJ Crane Packing Co.

Seals, Vacuum.....Offer a complete line of NRC vacuum tight seals & lead throughs for introducing electricity or motion into a vacuum system. For complete information request Brochure S1.
352f *National Research Corp.

*From advertisement, this issue.

1956 INVENTORY

Sheaves.....Stationary & motion control "Vari-Pitch" sheaves for speed variations up to 76 percent by means of pitch diameter adjustment, capacities 1 to 600 hp. are described in illustrated Bulletin No. 20B6082C.
243A Allis-Chalmers Mfg. Co.

Teflon Products.....Illustrates various of the many special molded & machined parts firm has fabricated from pure teflon, glass-filled teflon, glass & carbon-filled teflon & zircon-filled teflon. Bulletin No. CP554.
243B Chemical & Power Products.

Teflon Products.....Illustrated booklet, "The Best in Teflon," covers data on Teflon parts & products—bellows, bellows connectors, pump & valve packings, tubing & other molded forms. 12 p. Chemlon Catalog.
243C Crane Packing Co.

Tools & Wrenches.....Contribute greater efficiency to assembly and maintenance operations by using Snap-On tools. For complete data request free catalog of industrial wrenches and hand tools. Yours for the asking.
243D Snap-On Tools Corp.

Transmission Equipment.....New engineering catalog covers the complete line of Dodge mechanical power transmission products. Includes sectional drawings, dimensions, weight, prices & applications.
243E Dodge Mfg. Corp.

Transmission Equipment, Power.....Illustrated, 24 p. describes line of power transmission equipment. Includes: variable speed pulleys; wide v-belts; sheaves; motor bases; countershafts; Select-O-Speed Transmission.
243F Lovejoy Flexible Coupling Co.

Transmission, Hydraulic, Variable Speed.....Features: infinitely variable speeds—up to 1500 rpm without gearing; constant or variable torque & hp; smooth braking & reversing; etc. Data in Catalog Section T-100.
243G Gerotor May Corp.

Transmission Systems.....16 p. bulletin describes the versatility of the Orthoflow system for transmission of flow data, liquid level data, or pressure measurement data. For details, see Bulletin No. 700.
243H Simplex Valve & Meter Co.

Transmissions, Gear.....New 8 p. booklet describes the 7 different models of the company's new Plan-Gear Transmission. Offer 1 or 2 forward speeds & a choice of reverse gear ratios. Request "Plan-Gear Transmission."
243I American Gear & Mfg. Co.

Turbines, High-Speed.....Well-designed, efficient seals . . . cut steam leakage . . . reduce maintenance costs of G-E High-speed Turbines Also feature low-cost, easily-replaced carbon packings. Bulletin GEA-6232.
243J General Elec. Co.

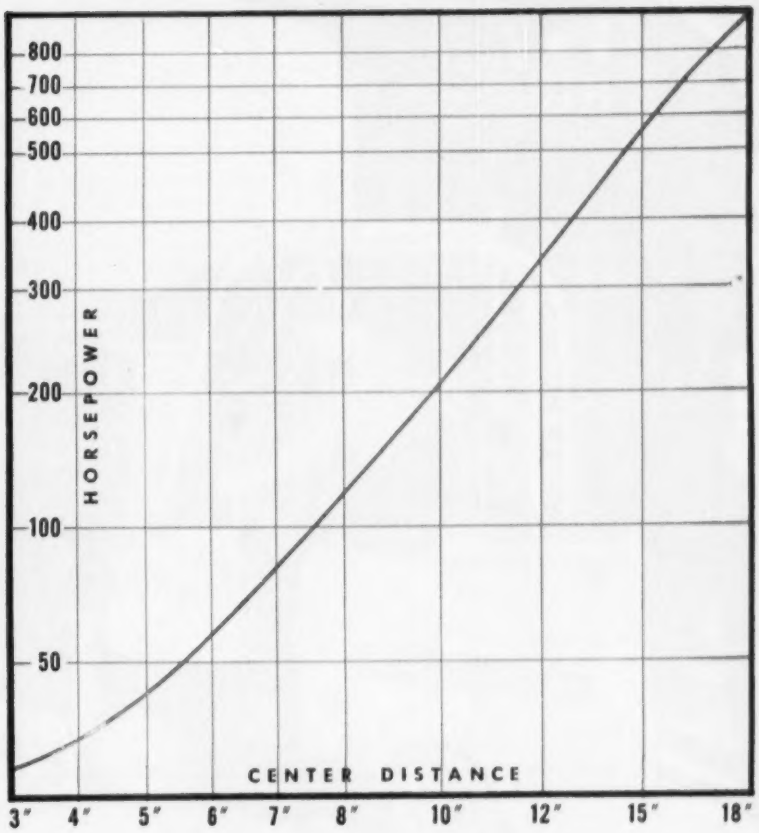
Turbines, Mechanical Drive.....New De Laval HCB Single Stage Turbine is simple, rugged, designed for long economical life and low maintenance. Detailed reference gives vital facts and figures. Bulletin 4206.
243K De Laval Steam Turbine.

Turbines, Mechanical Drive.....High speed mechanical drive turbines, operating at speeds ranging up to 10,000 rpm and above, are described in a new bulletin. For complete details, request Bulletin GEA-6232.
243L General Elec. Co.

Turbines, Solid-Wheel.....Features reliable, trouble-free operation. Rugged construction and superior design result in savings by keeping maintenance costs down to a minimum. Full details in Bulletin No. S-116.
243M Terry Steam Turbine Co.

Turbines, Steam.....Turbines range from 150 horsepower down to fractional in 6 frame sizes. Feature large number of manually operated valves for individual control of steam nozzles. Details in Bulletin 135.
243N Coppus Engrg. Corp.

"DO-IT-YOURSELF"



Prove the difference in worm gear speed reducers yourself. Here's how . . .

. . . On this chart we've plotted the mechanical horsepower capacity of Cone-Drive worm gear speed reducers against their center distances. Ratings are for Class I Service with a 5:1 reduction and an input speed of 1750 rpm.

All you have to do is plot the corresponding ratings for the speed reducers you're now using or planning to use. We think you'll be surprised at the results.*

For details on Cone-Drive gearing's double-enveloping design and specifications, ask for Bulletin 600C. We'll send it to you immediately without obligation.

*If you're too busy to "Do-it-yourself", Cone-Drive representatives will be glad to show you filled-in charts.

CONE-DRIVE GEARS
Division, Michigan Tool Company
DOUBLE ENVELOPING GEAR SETS & SPEED REDUCERS
7171 E. McNichols Road • Detroit 12, Michigan

Inquiry Code Number for This Advertisement-243

Plastics Engineering Co., Sheboygan, Wisconsin, operates two fire-safe Allis-Chalmers fork trucks. One works in the kettle room where alcohol fumes are a hazard. The other moves material in the grinding room where there is danger of dust explosion.



when the sign says **FLAMMABLE**

. . . better play it safe with Allis-Chalmers safety diesel trucks

In many plants, the very atmosphere is explosive because of dust or fumes. A single spark can touch off disastrous fires. While conditions like this call for the utmost care, the need remains for efficient material handling.

To meet this need, Allis-Chalmers has developed a Safety Diesel Fork Truck especially for hazardous areas. It runs on low-volatile fuel and requires no electrical system. The starter is hydraulic, gauges are mechanical, the horn is air-operated. As further precautions, surfaces of the manifold and muffler are water-cooled, exhaust gases pass through a water quench, tires are grounded — the forks may be spark-proof manganese bronze.

These fork trucks are approved by the Mill Mutual Fire Prevention Bureau, and are in use at a rapidly growing number of plants where explosive conditions exist. Whether you need fire-proofed safety or unmatched material handling efficiency, you'll find an Allis-Chalmers fork lift truck is your wise choice. Write for literature, or get all the facts from your Allis-Chalmers Buda Division dealer.

MATERIAL HANDLING DEPT., BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

BH-9

Bag Closer

Takes under 6 sec. (245A)

. . . Portable bag closer for textile and paper bags closes them in less than 6 sec. Weighing only 10½ lb. stitcher operates from any 110-v. a.c. line, can be held in one hand.—*Dave Fischbein Co., Minneapolis 3, Minn.*

Bag Package

Foil interliner bars moisture. (245B)

. . . A laminate of aluminum foil and paper now is used as one of the plies of multiwall bags for bulk packaging of hydroscopic chemicals, resins or other products requiring a high degree of moisture protection. It is said to offer three times the protection provided by a polyethylene liner.—*Hudson Pulp & Paper Corp., New York, N. Y.*

Bag Packers

Flexible, rapid. (245C)

. . . A new line of valve-bag packing machines that embodies the most advanced developments now is available. Packers offer high packing speed and good flexibility for handling various bag sizes. The Ful-Pac machine uses a screw to move and deliver the materials. All models are encased completely within easily removable steel jackets to provide top safety and protect the mechanical parts.—*Fulton Bag & Cotton Mills, Atlanta, Ga.*

Carrier, Bulk

Delivers bigger loads faster. (245D)

. . . Offering fully hydraulic operation, new model SF-5 bulk material body can unload up to 1 ton/min. Material can be discharged into grills or hoppers or onto the ground. The swivel conveyer can be used to discharge 15 ft. above the ground or higher. Model SF-5 is built in lengths from 10 to 34 ft., truck or trailer mounted.—*Baughman Mfg. Co., Jerseyville, Ill.*

Carrier, Straddle

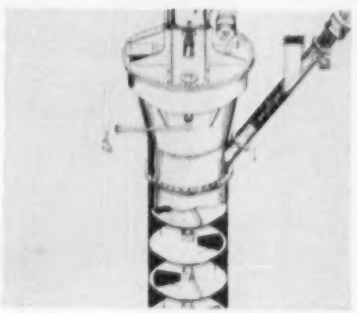
Pivoted load hooks swing in from side. (245E)

. . . In place of rigid load hooks, new straddle carrier has four forks, two on each side. These swing in at right angles, meet in the center to form two arms under the load. It is available in size models to carry loads ranging in height from 48 to 66 in. and in width from 40 to 52 in. Capacity is 10 tons. Since hooks extend under full width of load, no bolsters are needed. Permanent skids or stringers are required only at the pickup and delivery points.—*Ross Carrier Div., Clark Equipment Co., Benton Harbor, Mich.*

Columns, Contacting

For counter-current liquid-solid flow. (245F)

. . . Designed to convert many batch operations into uniform continuous flow the A-C contact column is a total submergence, liquid-solid counter-current unit. It is adaptable to a wide variety of operations such as leaching of ore with water, acid or alkali; dissolving; decorization; ion exchange molecular sieving; catalyzed reactions; absorption and oil extraction. Column diameters vary from 12 to 84 in. with solids throughout capacities up to 1,000 tons per day.—*Allis-Chalmers Mfg. Co., Milwaukee, Wis.*



Container, Bulk Liquid

Now transports polyvinyl acetate emulsion. (245G)

. . . The Kaiser Nest-A-Bin bulk container now has been adapted by Shawinigan Resins Corp. to handle polyvinyl acetate emulsions. Holding 550 gal. the unit is expected to reduce substantially customer in-plant handling costs. Bin is manufactured of aluminum with upper and lower body sections joined at the center to form the assembled bin. When empty, the sections are separated and nested one within the other in order to save space. A hose connection at the bottom provides for drainage. Bin is filled through 3-in. top opening.—*Kaiser Nest-A-Bin Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif.*

Container, Rubber

Carbon black container tested at sea. (245H)

. . . First trial shipment of carbon black in new type returnable rubber container was loaded aboard the Holland-American vessel Almdyk at Port of Houston last year. With a gross weight of 9,180 lb., the 370 cu. ft. container was lifted by an eye at the top connected to internal lifting cables running through to the bottom. Container is constructed of synthetic rubber and fabric.—*U. S. Rubber Co., New York, N. Y.*



THE big line of Tri-Sure* Closures—for drums, pails and cans—gives you a choice of the best-designed, best-made and best-known fittings for shipping containers—recognized the world over as the standard of dependability.

Tri-Sure Closures for Drums protect your product with an assembly of flange, plug and seal that is *exclusive* with Tri-Sure—and that has been proved year after year the *best way* to prevent losses from leakage, tampering and contamination.

Tri-Sure Closures for Light Containers make your pails and cans easier to *fill, ship, stack* and *pour* —advantages that stimulate sales, build good will, and help hold customers.

Standardize on Tri-Sure Closures—and make every container a better package, and every gallon better protected. Send today for full information on the complete Tri-Sure line.

** The "Tri-Sure" Trademark is a mark of reliability backed by over 35 years serving industry.*



AMERICAN FLANGE & MANUFACTURING CO. INC., 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.
CHICAGO, ILL. · NILES, OHIO · LINDEN, N. J.

Tri-Sure Products Limited, St. Catharines, Ontario, Canada
Tri-Sure S/A Indústria e Comércio, Sao Paulo, Brazil
American Flange & Manufacturing Co. Inc., Miowera Road, Villawood, N.S.W., Australia
B. Van Leer N. V., Stadhouderskade 6, Amsterdam, Holland
Van Leer Industries, Ltd., Seymour House, 17 Waterloo Place, Pall Mall S.W. 1, London, England

Conveyor, Belt

In pre-engineered, standardized sections. (247A)

. . . Pre-Bilt sectional belt conveyors in standardized, pre-engineered units are now available from nine Link-Belt plants spread all across the United States. In capacities up to 1,500 tph. these conveyors are built in the plant nearest to installation point.—*Link-Belt Co., Chicago, Ill.*

Conveyor, Hot Material

Withstands temperatures to 1,400 F. (247B)

. . . Even scorching chunks of metal as hot as 1,400 F. cannot burn holes through a new kind of rubber conveyor belt designed to handle hot materials. Fire curtain construction with two plies of glass fabric afloat in the top rubber cover.—*Goodrich Industrial Products.*

Conveyor-Cooler

Pneumatic system cools and conveys powder. (247C)

. . . A new line of cooling and conveying systems can reduce temperature of powdered products to 100 F. or lower prior to packaging. Cool, clean air picks up the powder through a specially designed positive-acting valve. Powder leaves through a second air valve. Air returns directly to the processing or drying chamber.—*Henszey Co., Watertown, Wis.*

Conveyor, Vibrating

Few moving parts. (247D)

. . . A new vibrating conveyor has minimum of moving parts, is oscillated by three eccentric weights held on individual shafts on the drive assembly. Each Oscilveyor is made up of one drive unit as well as any number of standard trough units.—*Gifford-Wood Co., Hudson, N. Y.*

Demineralizer

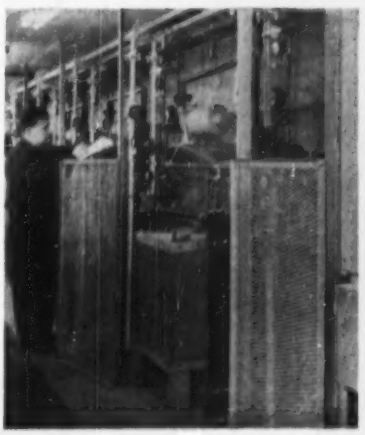
Works automatically with mixed-bed ion exchange. (247E)

. . . Up to 200 gph. of high purity water is produced by the new MA-200 Mono-Column demineralizer. Furnished as a completely packaged unit, this exceptionally compact machine need only be connected to the plant water system and the areas requiring high purity water. The regenerative tanks fill automatically, fresh acids and caustics—may be added in preparation for the next cycle.—*Penfield Mfg. Co., Meriden, Conn.*

Demineralizer, Electric Membrane

First units handle 1,100 thousand gal. per day of water. (247F)

. . . In two basic models, electric-membrane demineralizers are now available to satisfy requirements for water in areas where it's hard to get fresh water but where brackish or mineralized water is plentiful. Investment costs per gal. per day of capacity vary from as little as 50¢ for removing 40% of salts and minerals to $2.00 or more for 87% removal. In the electric membrane demineralizer electrolytic action moves ions through barrier membranes that isolate the water being demineralized. Each purification zone is bounded by two membranes—one cationic, the other anionic. The cationic membrane will pass only positive ions; only negative ions will pass through the anion membrane.—*Ionics, Inc., Cambridge 42, Mass.*



Drum Attachment

Fits all fork-lift trucks. (247G)

. . . With a new grab attachment that fits all trucks on the market, present fork-lift equipment can be modified at minimum cost to handle drums. Unique design utilizes gravity to grab, hold and release drums or containers without power.—*Kughler Development Corp., New York, N. Y.*

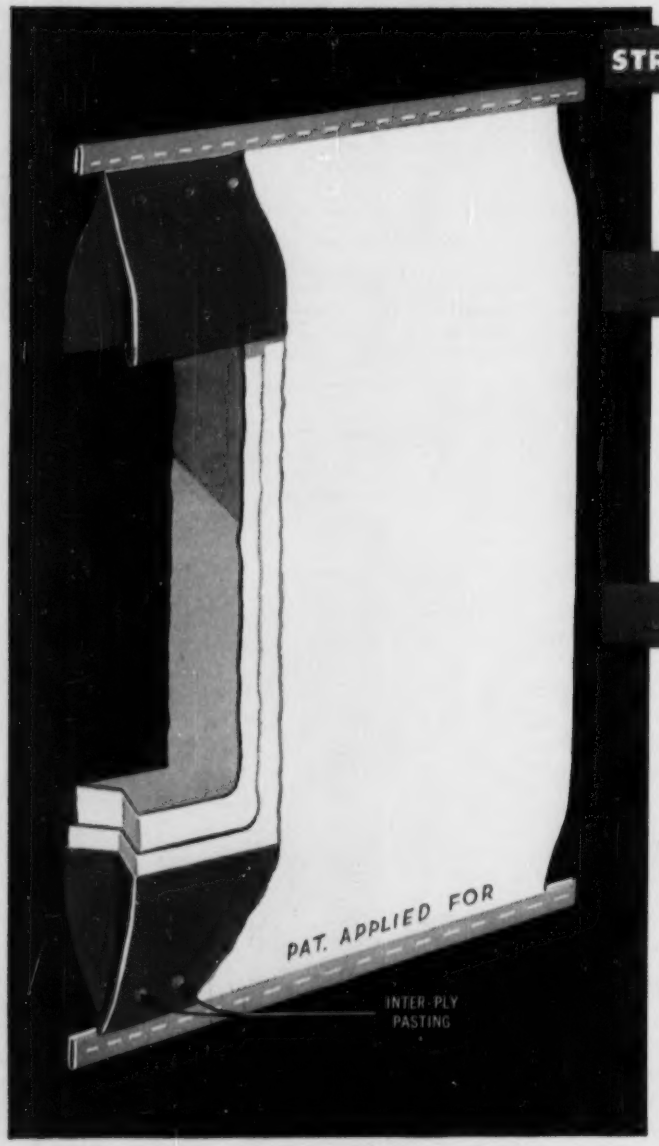
Drum, One-Piece

Easy to handle. (247H)

. . . A new one-piece octagonal drum can be assembled at the point of filling with three to five stitches. It saves 20¢ per hundred drums freight cost. Simplified set-up process saves labor and material and it improves inventory handling.—*Gaylord Container Corp., St. Louis, Mo.*

New *Strength-end* * Bemis Multiwalls

the shipping sack with BALANCED STRENGTH



STRONGER AT THE RIGHT PLACES

New Bemis Strength-End Multiwalls, strengthened top and bottom where most sewn bag breakage is experienced, will cut packing troubles and costs for you.

TWO WAYS TO SAVE

You'll save money one of these two ways with Bemis Strength-End Multiwalls: You may switch from a more expensive type of shipping container. Or, if you are already using multiwalls, you might use bags with fewer plies, because of the greater end strength, where it is needed. Bemis Strength-End Multiwalls may, at lower cost, do your job as well or better.

SUCCESSFULLY TESTED

Bemis Strength-End Multiwalls have been successfully tested in all sections of the country and under all climatic conditions. They have proved themselves for packing cement, fertilizer, chemicals, flour, salt.

Here's how it's reinforced

The reinforcement in Bemis Strength-End Multiwalls is a strip of sturdy kraft, several inches wide, running horizontally around the bag at the ends... anchored to the other walls so it works in conjunction with them . . . and adding greatly to the strength both at the sewing line and at the gusset corners. It's just plain, common-sense, balanced strength construction.

*TRADE-MARK

Get the complete story about Bemis Strength-End Multiwalls from your Bemis Man.

Bemis

BEMIS BAG CO.

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

Inquiry Code Number for This Advertisement-248

Drums, Steel

Have conditioned, protective surfaces. (249A)

. . . JaLized 55-gal. steel drums have a protective coating which increases adherence, durability of paint surfaces. They are laundered and dry. For clear liquid, non-corrosive products, the zinc phosphate coating needs no further painting.—*Jones & Laughlin Steel Corp., Pittsburgh, Pa.*

Dumpers

For a variety of requirements. (249B)

. . . A new line of PowRdumpers now is offered to handle a range of dumping needs. These units can raise drums, barrels, bags, boxes, trucks, or any type container; can turn the container to any desired dumping angle and discharge the contents, without spilling or dripping, into any type or receptacle at any desired height.—*Langley Mfg. Co., Cambridge, Mass.*

Elevator-Conveyor

Improved type, costs less. (249C)

. . . Offered as an improved continuous flow or en-masse type of elevator conveyor, the Smoothflo unit incorporates features that reduce the thrust of material against duct side walls. Capacity ranges from 5 to 50 tph. Speed is 30 to 60 ft. per min.—*Fairfield Engineering Co., Marion, Ohio.*

Freight Car

Has basic all-in-one design. (249D)

. . . Completely new railroad freight car can serve in box, container-hopper, gondola, tank, hopper or "piggy-back" service by interchanging removable superstructures on the bed. Basic unit is a 35-ft. flat car mounted on single-axle trucks. The wheels operate on roller bearings. The car weighs less than ½ the weight of conventional cars, yet it has 70% the capacity, carries three times its own weight.—*ACF Industries, New York, N. Y.*



Lift, Drum

Enables one man to handle drum. (249E)

. . . New drum lift, which enables one man to handle up to 750-lb. drums, is supplied with power by a foot-operated hydraulic jack. Drums can be raised for pouring to a height of 53 in. They may be rotated 360 deg. or stacked two high.—*Sterling, Fleischman Co., Broomall, Pa.*

Liner, Plastic

In heavy gage for steel containers. (249F)

. . . New JaLiner heavy-gage polyethylene tubing and sheet for lining steel containers cuts cost of shipping chemicals and other liquids which would otherwise have to be shipped in stainless steel, glass or molded plastic containers. Tare weights, shipping cubes and insurance rates are reduced.—*Jones & Laughlin Steel Corp., Container Div., Pittsburgh 30, Pa.*

Linings, Container

For hand-installed corrosion protection. (249G)

. . . All you need to install the new Fluorolin 202 lining are shears and a straight edge. It combines the chemical inertness of Kel-F with the mechanical rigidity of aluminum foil. Pressure-sensitive adhesive on the foil backing holds it in place.—*Joclin Mfg. Co., North Haven, Conn.*

Loader, Front End

For small areas. (249H)

. . . A front-end loader, the TL-11 Tracto-Loader, has been introduced to the bulk handling market. The machine has 1¼-yd. capacity, and it can operate in confined areas.—*Tractomotive Corp., Deerfield, Ill.*

Packing, Tower

140% increase in efficiency. (249I)

. . . With Tellerette packing, liquid is held up in interstitial spaces rather than on wetted surfaces. Result—efficiency is increased 140% over other equivalent size packings, reducing height of packed bed necessary for given separations. Tellerette packing is a polyethylene spiral bent into continuous circular form. Its light weight is only ⅓ that of conventional packing. Compared to Raschig rings Tellerettes have three times the surface and 35% more free volume.—*The Harshaw Chemical Co., Cleveland, Ohio.*

Pallet, Molded

Lowers materials handling costs. (249J)

. . . Weighing only 28 lb. a new type materials handling pallet molded of fibrous-glass-reinforced polyester resins will support 3,000 lb. Unit resists wear, impact, abrasion, oils, grease, acids, alkalies and steam sterilization up to 325 F.—*Firmline Products, Inc., Midland Park, N. J.*

Platform, Portable

Loads rail cars in limited space. (250A)

. . . When this portable magnesium platform is used in conjunction with the manufacturer's yard ramp, loading of railroad cars can be done in limited trackside space. Yard ramp is positioned at car door opening when the side space is sufficient. Otherwise ramp is attached to new platform parallel to the track; loading truck rides up it to platform where it loads rail car. Platform is 96 by 96 in. and weighs about 772 lb. Capacities range from 6,000 to 16,000 lb.—*Magnesium Co. of America, East Chicago, Ind.*

Pump, Solids

Fluidizes solids, moves them like water. (250B)

. . . Handling a variety of solids, Fluidizer solids pump moves them with the ease of conventional pumps moving liquids. Portable and easy to install without expensive plant modifications, the unit pumps solids from alfalfa meal to zinc oxide. Immediate applications are unloading and loading of bulk trucks and railroad cars as well as conveying of material from storage bins to packing or processing operations — all without dusting. — *Superior Separator Co., Hopkins, Mass.*

Scale, Checkweight

Handles bags, drums or cartons. (250C)

. . . A completely automatic checkweight scale furnishes weight readings in digital form printed on dual tape with the item number printed adjacent to the weight. The automatic scale will print out total weight of the combined items whenever desired. The complete system consists of a weighing conveyor assembly and a console containing the printer.—*Weighing Components, Inc., Hatboro, Pa.*

Seal, Hoppers Car

Bars contamination. (250D)

. . . Extra protection for purity of products being shipped in railroad hopper cars is secured with a new paper hatch cover. Developed by Victor Chemical works with the assistance of Chase Bag Co., it assures Victor's customers of receiving uncontaminated shipments of sodium phosphates. It consists of two sheets of paper laminated with a water-resistant adhesive and crinkled to provide stretch.—*Chase Bag Co., Chicago, Ill.*

Seal, Vapor

Plastic screen floats in storage tanks; minimizes vapor loss. (250E)

. . . Vapor loss from storage tanks containing crude and refined petroleum products and solvents can be reduced 80 to 90% by a new floating plastic screen. Made to measure, the screen covers all the free liquid surface in the tank leaving a gap of about 1 in. around the periphery. To seal around the edge of the screen a flexible Z-shaped skirt is provided to contact the tank wall. It's sufficiently flexible to free itself should it get caught in rivets during rise or fall of the liquid. Explosion hazard in the vapor space is almost eliminated.—*Laroch Freres, Paris X, France.*

Shovel, Tractor

New way to break out load at ground level. (250F)

. . . Two entirely different four-wheel-drive tractor shovels provide 40 degrees of bucket "breakout" at ground level rather than at a three or four foot "carry" position. To obtain maximum loads at minimum effort, breakout pads are used on the ground to exert a powerful prying out action. Thus load forces are transferred through the pads rather than the axle, wheels and hydraulic systems.—*The Frank G. Hough Co., Libertyville, Ill.*

Skip Hoist, Portable

Cuts manual labor. (250G)

. . . Caster-mounted portable skip hoist and dumper lifts, up-ends and dumps any free-flowing material at rates up to 15 tons/hr. This combination hoist and dumper handles bags, boxes, drums, barrels.—*Colson Equipment & Supply Co., Los Angeles 13, Calif.*

Storage Units

For bulk, free-flowing materials. (250H)

. . . Fabricated in one unit mounted on four legs, a new all-steel bulk storage unit is available in 10 or 25 ton capacities. The unit is designed for fertilizer, cement minerals, rock phosphate and many other similar bulk solids.—*Andrews Machine Co., Decater, Ill.*

Tape, Pressure-Sensitive

Repairs industrial bags. (250I)

. . . Loaded bags which may sustain punctures during handling operations may be effectively repaired by applying No. 131 Behr-cat Flatback pressure-sensitive tape directly over the tear. Repair is completed by simply applying second overlapping layer of tape. This pressure sensitive tape has tensile strength of 45 lb. and adhesive grip of 65 oz. per in. of width.—*Behr-Manning Div., Norton Co., Troy, N. Y.*

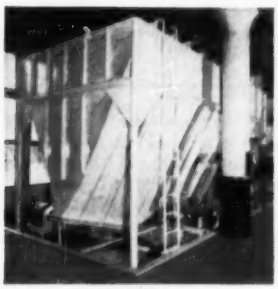


IS AN OBSOLETE RAW MATERIALS-MOVING METHOD

Throttling Your Plant's Efficiency?

The AIRVEYOR®

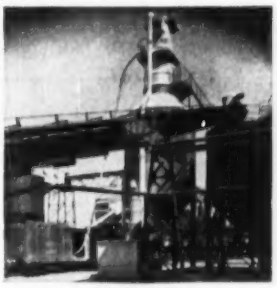
IS FASTER, CLEANER, SAFER, CHEAPER



BAKERY



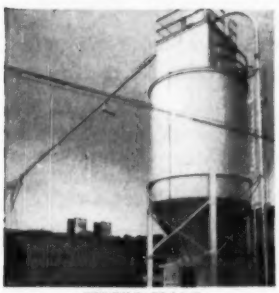
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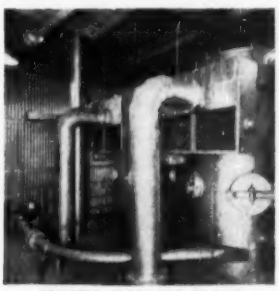
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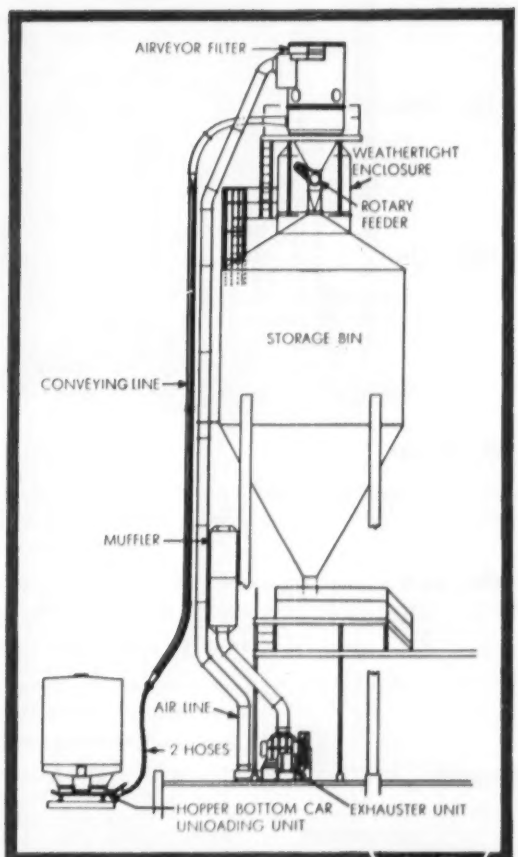
BREWERY



TEXTILE PLANT



PLASTIC MOLDING PLANT



Facts are hard to beat and it's a fact that bulk materials-moving—from cars or trucks to storage . . . and on to process—is a vital part of your operation, demanding top efficiency if your production is to be maintained or increased. The system(s) you are now using may be taking a costly annual toll in lost time, lost production and excessive maintenance. Take a good, close look and you may be surprised to find that your materials handling operation is now, or is becoming a bottleneck—the slowest ship in your production convoy.

If you handle raw chemicals, bakers' ingredients, brewers' grains or other materials of similar consistency, you'll be interested in the facts about Airveyor, the Fuller system that has put air to work in hundreds of installations across the country and Canada.

Fuller experience in harnessing air to move dry materials spans more than a quarter of a century and covers the widest variety of applications. Take the first step toward putting this experience to work for you by letting us make a study of your operation. It costs nothing and may well light the way to greater production at less cost.

FULLER COMPANY
134 Bridge St., Catasauqua, Pa.
A SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORP.
Chicago • San Francisco • Los Angeles • Seattle • Kansas City • Birmingham

Fuller
pioneers in harnessing AIR

Inquiry Code Number for This Advertisement-251

Tanks, Compartmented

Store two or more products at once. (252A)

. . . Two or more liquid-tight compartments can now be installed in one standard cone-roof storage tank. Easy to erect and absolutely safe for storing highly miscible products under one roof, the new tanks are set up so that each compartment can be filled and emptied individually through its own inlet and outlet.—*Graver Tank & Mfg. Co., East Chicago, Ind.*

Tanker, Glassed Steel

For all acids except HF. (252B)

. . . For safe handling of lading, a 2,200-gal. glassed steel tanker carries alkalis to pH 12 and all acids except hydrofluoric. Bottom outlet for tank washout is located near the rear platform, is sealed with beveled Teflon plug capped with a bolted steel flange. —*The Pfaudler Co., Rochester, N. Y.*

Tractor, Car-Moving

Pulls heavily loaded freight cars. (252C)

. . . The new heavy duty Trackmobile hauls, switches, and spots railroad cars; can double as a trackless tractor to pull carts and skids around the plant. It travels on roadways or across track on four pneumatic wheels. Placed astride a track, it can retract its road wheels so that within 90 sec. it rests on its steel rail wheels.—*Whiting Corp., Harvey, Ill.*

Tractor Shovel

For in-plant, bulk handling. (252D)

. . . Recently added to the Michigan line of rubber-tired tractor shovels is a 15-cu.-ft. unit for in-plant handling of bulk materials. Featured in this model 12B is a power-shift transmission, a torque converter with 3 to 1 multiplication, a planetary wheel axle and low-level bucket action.—*Construction Machinery Div., Clark Equipment Co., Benton Harbor, Mich.*

Trailer, Bulk

For dry granular chemicals. (252E)

. . . Bulk trailer for dry granular chemicals has built-in pneumatic system to unload lading directly into customer's storage. A Vacu-Veyor pneumatic conveyor is mounted at front end of trailer with conveying line running beneath hoppers to rear end. Solids discharge at 22-ton-per-hr. rate. Trailer accommodates 17-20 tons. —*Vacu-Blast Co., Belmont, Calif.*

Transfer Unit

Automatically handles cylindrical loads between conveyors. (252F)

. . . An automatic transfer unit now is operating to transfer rolls of paper from a belt to an overhead trolly conveyor. It can be applied equally well to the transfer of bales, drums, rolls and other loads that can be rolled. Unit consists of a section of grooved live-roll conveyor which is mounted on a carriage at the end of a conveyor run. When the load has moved on to the carriage-mounted section of live-roll conveyor, it strikes a limit switch that stops the conveyor. —*Lamson Corp., Syracuse, N. Y.*

Truck, Drum

Designed for loading pallets. (252G)

. . . One operator can place heavy drums on pallets with ease when using the Ezy-Rol cart. Shoes on the truck are placed against the edge of the pallet. Then with one easy forward motion the operator can elevate the drum to the pallet.—*Valley Craft Products, Inc., Lake City, Minn.*

Trucks, Fork

Newest type since war. (252H)

. . . A new line of fork trucks features a raft of advanced innovations corresponding to progressive automotive trends. Among the improvements: A 12-v. electrical system, fully automatic transmission, emergency fuel tanks, foam rubber seats and automobile type controls. Streamlined through the chassis, the new line of fork trucks includes gas models with capacities which range from 2,000 up to 5,000 lb.—*Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.*

Unloader

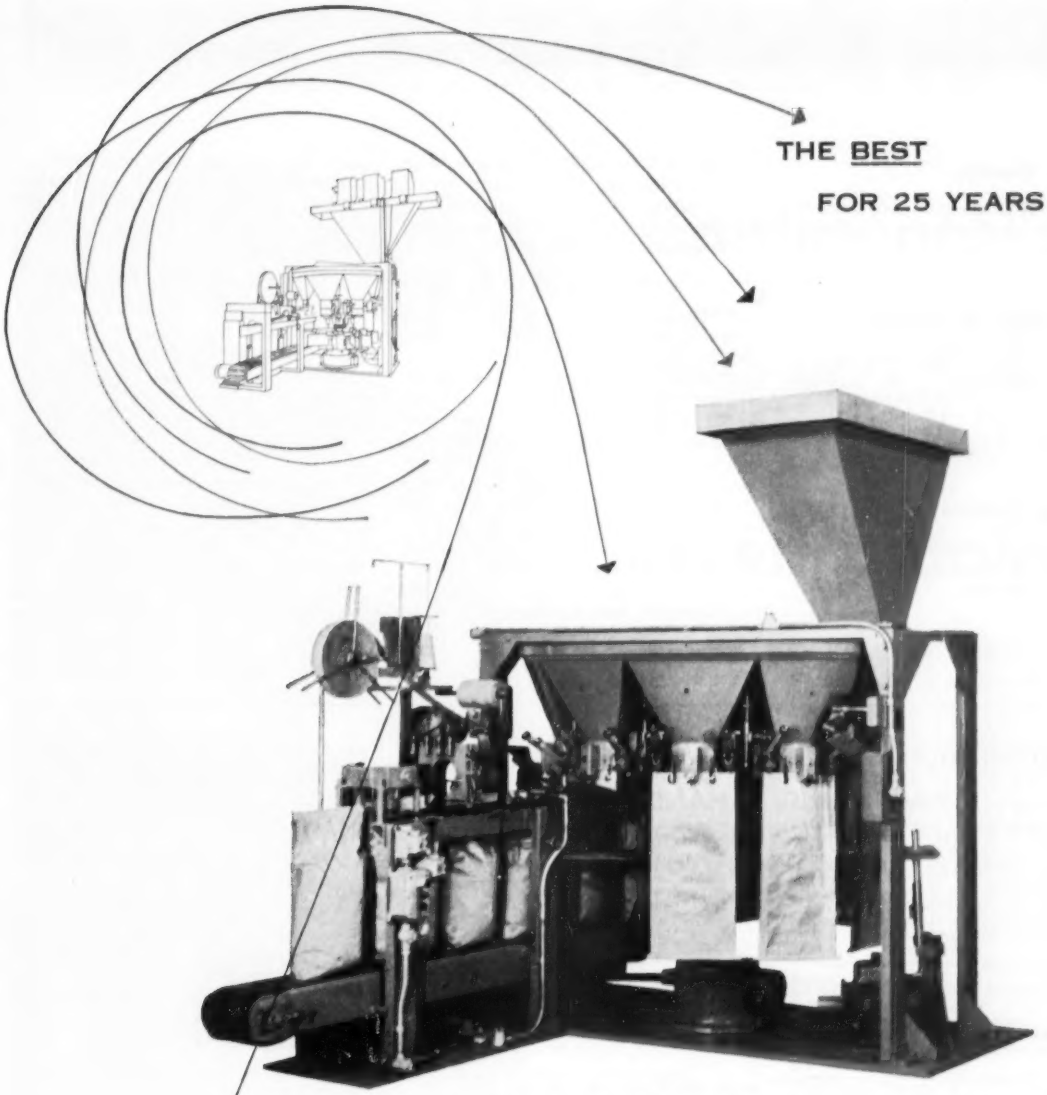
Tilts boxcar, shakes out material. (252I)

. . . A unique Kar-Flo unloader locks a 150,000-lb. railroad boxcar in its grasp and rocks out free-flowing bulk solids with a gentle oscillating motion. Solids flow smoothly and continuously through the car door into receiving hopper below the unloader.—*Link-Belt Co., Chicago, Ill.*

Unloading System

Package assembly for pneumatic unloading. (252J)

. . . A new package assembly of a pneumatic unloading system enables medium and small plants to reap advantages of pneumatics. Named "Airo-Flow" it consists of a 25 hp. motor, a rotary positive displacement blower, a cyclone separator, blow-through air lock, inlet nozzle, flexible hose and auxiliary piping and fittings. —*Sprout, Waldron & Co., Muncy, Pa.*



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"THE BAGPAKER" NEW MODEL "AF" FEATURES:

- *New Simple Design—for free-flowing or semi-free-flowing feeds, fertilizers, etc.*
- *Simplified Operation and Maintenance.*
- *Automatic sewing reduces bag size—cuts cost.*
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- *LOWER COST.*

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Vehicles, Electric

For low-cost industrial transportation. (254A)

. . . Two new electric vehicles for industrial use are the Mustang delivery model for light hauling jobs and the Mustang trucker for carrying loads up to 1,500 lb. Manufacturer claims the vehicles show automotive-quality engineering with all parts, including wheels, easily removable for quick maintenance.—*Laher Mustang Mfg. Co., Oakland 7, Calif.*

Weigh Batching System

Punch card governs batching. (254B)

. . . A new electronic weigh batching system operates in conjunction with IBM's punch card system. For the first time, it is reported, the speed and accuracy of electronics have been united with commercially acceptable weighing units. With the Helco-matic Batch-master system, combinations of material weights and selections are unlimited and they can be changed instantaneously. Where repetitive batches are called for, the Helcomatic will cycle automatically. System meets all existing federal and state specifications.—*The Heltzel Steel Form & Iron Co., Warren, Ohio.*

Weighing System

Not affected by wide-range temperature change. (254C)

. . . Reliable accuracy despite extreme temperature variation, vibration, sudden changes in load, or the presence of dust or dirt distinguish the Electo-Way system. This continuous weigher for conveyor belt systems is considerably lighter, smaller and more compact than similar equipment. The rugged dependability and high accuracy of the system are said to stem from use of a single large Ni-Span C spring, plus electronic connections.—*Bell Automation Corp., Rochester, N. Y.*

TECHNICAL LITERATURE

PACKAGING & HANDLING EQUIPMENT

Acrylonitrile Handling . . . . . Issues a Technical Service Bulletin discussing the techniques for safe storage and handling of acrylonitrile. A data sheet insert listing physical properties of the pure compound is included.
254D Monsanto Chem. Co.

Bag Closers. . . . . No installation necessary . . . plug into any outlet; closes average 100 lb. bag in less than 6 seconds; simple to operate and maintain; can be suspended for stationary use. Request complete details.
257 *Dave Fischbein Co.

Bag Packers. . . . . An Auger-Matic Bag Packer offers you a simple and efficient method of filling paper valve bags at low costs. Sturdily constructed to give you years of dependable service. Illustrated Folder upon request.
254E E. D. Coddington Mfg. Co.

Bag Packers. . . . . Fully illustrated, 12 p. describes Stoker bag packers . . . designed to handle powdery, granular or pelleted materials. Includes outstanding features, operation, applications, attachments, etc.
254F H. L. Stoker Co.

Bag Packers. . . . . New Model "AF" features simplified design, operation & maintenance. Automatic sewing reduces bag size & cuts cost. Packs 20 to 25 multiwall bags per minute with one operator. Request literature.
253 *International Paper Co.

Belting. . . . . New 4 p. bulletin released on Lightweight Neoprene Belting. This belting, used for conveying, elevating & power transmission, is available in 4 styles with specific widths & lengths. Bul. 561.
254G General Rubber Corp.

Belting, Conveyor. . . . . Releases a wall chart on the proper selection & maintenance of conveyor belting. The chart (23 in. x 33 in.) contains 12 practical maintenance tips for getting more life out of belts.
254H Hewitt-Robins.

Belting, Conveyor. . . . . Fully illustrated, 36 p. bulletin includes sections on: conveyor belting; coal conveyor belting; food processing belting; rubber accessories; engineering data. Request your copy of Bulletin No. 141.
254I Hewitt-Robins.

Belting, Conveyor. . . . . For hauling capacity tonnages of coal, ore, rock & gravel to greater heights . . . over longer distances, use practical, low-cost Super-Raynlie conveyor belting. Details in Folder No. H-21.
254J Hewitt-Robins.

Belts, Conveyor, Woven Wire. . . . . Presents a 130 p. Reference Manual illustrating and describing company's woven wire conveyor belts. Also special report, "9 Ways to Speed Production in Rubber Processing."
254K Cambridge Wire Cloth Co.

Bins, Bulk Storage. . . . . Vertical or horizontal bins, of special sizes or groups, are furnished to meet production needs. Optional equipment includes air lock rotary valves and twin screw feeders. Bulletins 529 and 549.
171a *Day Co.

Buckets. . . . . Illustrated, 24 p. covers 2, 3, & 4 line Clamshell Buckets. Includes classified tables of some 60 different sizes of buckets, containing wt., dimensional & capacity data. Request Bulletin 2378-R.
254L Blaw-Knox Co.

Bulk Material Body. . . . . New Baughman Model SF-5 Bulk Material Body with full hydraulic operation offers its user faster delivery, bigger payloads and less maintenance. Illustrated Brochure furnishes full details.
254M Baughman Mfg. Co.

Cans, Seamless Metal. . . . . Widely used by industry, laboratories & the medical trade for packaging, storing & handling parts & products. Available in 1/16 oz. to 16 oz. capacities. Data in illustrated Bulletin 116.
254N George D. Ellis & Sons.

Car Switches. . . . . Illustrated literature describes changes in new model Hem-Co-Motive—a roadable type rail car switcher which utilizes the box car's weight, through weight transfer, to obtain traction. 6 p.
254O Hemco Mfg.

Carloading Practices, Freight. . . . . Offers a Carloading Check Chart for Anchored Loads. Chart includes instructions for preparing car, wrapping anchor plates, draping car, bulkhead construction, use of strapping tools.
254P Signode Steel Strapping Co.

Carriers, Straddle. . . . . Company announces a straddle carrier with load hooks which pivot inward to permit carrying without bolsters. Describes outstanding advantages and specifications in illustrated Folder.
254Q Clark Equipment Co.

Carriers, Straddle Dump. . . . . Completely illustrated Brochure describes company's new Straddle Dump Carrier. Included are performance characteristics, construction details, and engineering specifications, 4 p.
254R Clark Equipment Co.

Cars, Freight. . . . . Descriptive booklet tells the story of company's highly-successful new RB-DF all-weather freight car which protects lading from temperature extremes, eliminates bracing and stops damage claims.
254S Evans Products Co.

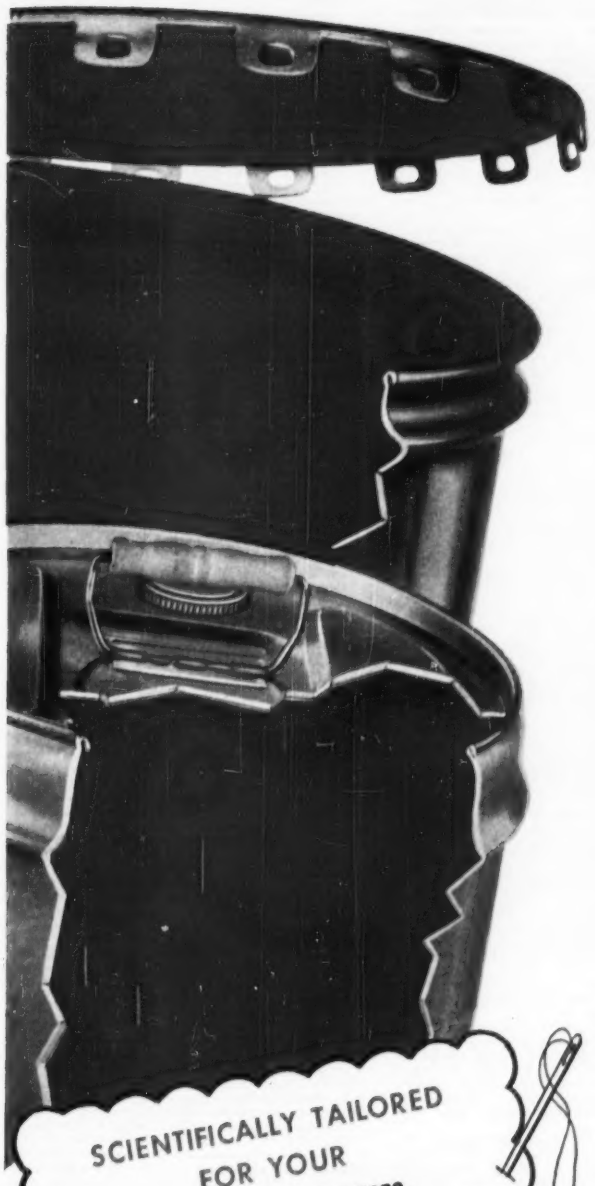
Caustic Potash Handling. . . . . Generously illustrated brochure describes the manufacture and usages of caustic potash. Reference includes detailed procedures for unloading and precautions for handling. 18 p.
254T Columbia-Southern Chem.

Caustic Soda Handling. . . . . Offers a helpful, handy wall chart (17" x 23") giving 37 specific, successful suggestions based on accumulated plant experience for safety handling solid, liquid & flake caustic soda.
254U Diamond Alkali Co.

Caustic Soda Handling. . . . . 72 p. Handbook covers proper methods of handling, storing, preparing & using water solutions of caustic soda. Data given in a form to facilitate its interpretation with minimum effort.
254V Diamond Alkali Co.

* From advertisement, this issue.

New protection for hard-to-ship products!



Continental's Perma-LINED steel containers

No matter how difficult your product is to ship, it will travel safe and sure in a Continental Perma-Lined steel container.

Perma-Linings are airless hot-sprayed in the formed container, then fast-baked to a rock-hard finish. Every square-inch of inner surface gets a uniform coat of tough enamel—even at side- and bottom-seams. That's because Continental's airless hot-spray process works exclusively with heat and hydraulic pressure . . . eliminates faulty spray patterns caused by compressed air.

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There's a wide variety of Perma-Lined containers waiting to go to work for you: open-top lug cover pails (sizes 2- to 12-gal.) and our 5-gal. tight head pail. For the finest in product protection, exciting lithography and tailor-made service, look into Continental's Perma-Lined steel containers now.

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TAILOR-MADE PACKAGE SERVICE

Packaging & Handling Equipment — 1956 INVENTORY

TECHNICAL LITERATURE

Chlorine Handling—

Magnets

Chlorine Handling.....48 p. Handbook gives basic data covering safe storage, handling & use of chlorine. Subjects discussed: history & growth of chlorine industry; characteristics of chlorine; containers; etc.
256A Diamond Alkali Co.

Clamps, Rotating Roll.....Lewis-Shepard announces a new 360° Rotating Roll Clamp which handles rolls from 24" to 48" in diameter in either the vertical or horizontal position. Makes available information.
256B Lewis-Shepard Products.

Closures.....Tri-Sure Closures for Drums and Light Containers . . . polyethylene plugs, polygonal flanges, seals, utility can closures, reversible spout assemblies, coated flanges and plugs, etc. Request details.
246a *American Flange & Mfg. Co.

Containers, Metal.....Illustrates & describes company's wide range of sizes & styles of metal containers that make it easier, less expensive, more convenient & reliable to package industrial products. Bulletin 57A.
256C George D. Ellis & Sons.

Converters, Ammonia, Portable.....In addition to speed, ease of operation and ready access to all operating parts are important features of the design of the Carlile portable ammonia converter. Request details.
256D J. C. Carlile Corp.

Conveying Systems.....Explains how the Fuller-Kinyon conveying system was successfully expanded to keep pace with increased production of finished talc when plant capacity was almost doubled. Reprint GDM-28.
256E Fuller Co.

Conveying Systems, Cooling.....New line of cooling and conveying systems, to meet the increasing demand for cooling powdered products before packaging. Request details on these compact pneumatic systems.
256F Henszey Co.

Conveyor-Elevator Systems.....If you have the problem of moving anything from coal to cornstarch—without dust or product contamination—Redlers are an economical answer. Full details in Catalog No. 140.
256G Stephens-Adamson Mfg. Co.

Conveyor-Elevator Systems.....For bulk handling problems where corrosion, degradation, dust or economical adaptation to limited space or plant layout are vital considerations. Information in Bulletin No. 349.
256H Stephens-Adamson Mfg. Co.

Conveyor Systems.....Brochure describes Rapistan Controlled Flow conveyor systems. Systems prevent usual flow-stoppage causes that reduce effectiveness of an ordinary gravity and power conveyor system. Illustrated.
256I Rapids-Standard Co.

Conveyor Systems, Pre-Engineered..... New line (Install-Your-Own) includes light-duty wheel gravity as well as medium & heavy-duty roller gravity conveyor sections in all standard widths. Detailed literature.
256J Lamson Corp.

Conveyors.....Describes the Model 600R "Handy-Handler" . . . a greater capacity lightweight conveyor for handling bulk materials. Includes data on the features and specifications. Request illustrated Form 54510.
256K Belt Corp.

Conveyors.....The 275 transfer conveyor features: lengths from 8'; widths 18", 24" & 30"; & handles almost any bulk material. Company offers new Folder, showing how you can figure horsepower & belt width.
258 *Barber-Greene.

Conveyors.....Illustrated, 40 p. covers four featured, patented products and custom built conveyor equipment. Includes: Magnavator; Tube-Veyor; Chip-A-Way; Welded Tube; etc. Request your copy of Catalog No. 400.
256L Prab Conveyors.

Conveyors.....New 16 p. catalog covers the entire line of Rapistan conveying equipment. Includes specifications and general data on each type of conveyor and shows actual applications of each unit.
256M Rapids-Standard Co.

Conveyors.....Announces release of new, illustrated 20 p. conveyor catalog. It is a facts book to be used for laying out a conveyor system using the new Lamson pre-engineered "Install-It-Yourself" units.
256N Lamson Corp.

Conveyors.....New portable Ve-Be-Veyor handles heavy loads—fast. The novel "in-the-groove" feature of the new Farquhar conveyor revolutionizes power-driven belt conveyors. Request Bulletin No. 600 for details.
256O A. B. Farquhar Div.

Conveyors.....In any industry wherever dry bulk materials are used . . . the introduction of Airstream conveyors invariably leads to lower-cost materials handling. For full details, request 24 p. Bulletin 529.
256P Dracco Corp.

Conveyors.....Handle packages, parts, units—faster—at reduced cost with gravity or power roller, belt, slat, chain, wheel or push-bar conveyors. Specifications, drawing & application data in Bulletin No. 309.
256Q Standard Conveyor Co.

Conveyors, Aluminum.....Easy-to-handle, durable and economical Ferguson aluminum gravity roller and gravity wheel conveyors are completely illustrated and described in a new, 4 p., two-color reference.
256R Harry J. Ferguson Co.

Conveyors, Fluidizing.....The F-H Airslide, fluidizing conveyor offers simplicity and noiseless ease in conveying alumina, phosphate, cement, flour, filler dust and other dry, fine materials. Descriptive literature.
256S Fuller Co.

Conveyors, Multi-Tier.....Convert heating, cooling, drying and similar operations from batch to continuous processing. Process products under exact time, temperature and atmospheric control. 8 p. Bulletin.
256T J. W. Greer Co.

Conveyors, Natural-Frequency.....Work on unique, patented vibrating principle which permits them to handle many materials too tough for most screw, belt, apron, vibrating, etc. conveyors. Bulletin No. 111.
256U Carrier Conveyor Corp.

Conveyors, Pan Type.....New booklet includes concise and factual descriptions plus photos, drawings, drive data charts, methods of operation, advantages of construction, etc. Request Bulletin No. 3255.
256V Simplicity Engrg. Co.

Conveyors, Screen.....IMCO Balanced Screen Conveyors permit the lowest initial investment costs possible for any screening or conveying operation. Designed for smooth, easy operation. Request details.
256W Williams & Green.

Conveyors, Screw.....Link-Belt's sound engineering and quality manufacture assure you of top performance. A 92-page Screw Conveyor Book contains complete ordering data. Request your copy. Book No. 2289.
256X Link-Belt Co.

Conveyors, Sectional Belt.....Fully illustrated, 8 p. product reference describes Pre-Bilt sectional belt conveyors in standardized, pre-engineered units with capacities ranging up to 1500 tons per hr. Book 2579.
256Y Link-Belt Co.

Conveyors, Steel-Belt.....48 p. hard cover book gives extensive engineering & application data. Covers basic features of the conveyor & the steel belt & offers details on characteristics, capacities, design, etc.
256Z Sandvik Steel.

Conveyors, Steel, Galvanized.....Describes new Rapistan galvanized steel conveyors. Includes construction details & data on why galvanized steel gravity conveyors are best for use under all conditions. Form GAL-55.
256AA Rapids-Standard Co.

Conveyors, Vibrating.....G-W Oscilveyor—the vibrating conveyor that puts all vibration to work . . . moves bulk materials inexpensively, quietly, rapidly. New Idea Book on engineered materials handling available.
256BB Gifford-Wood Co.

Conveyors, Vibrating.....Ajax Vibrating Lo-Veyors are self-contained and require little headroom for drive and pan. Easily and quickly installed on or below floor levels, or suspended from walls or ceilings. Bul. 39.
293 *Ajax Flexible Coupling Co.

Conveyors, Vibrating.....Jeffrey vibrating conveyor propels salt through a drier, drying it to .02% moisture content. Whatever your processing-conveying problem, Jeffrey can handle it. Request Catalog No. 860.
256CC Jeffrey Mfg. Co.

Cranes, Buckets.....To enable users of overhead traveling bucket cranes to obtain maximum cable life and top performance from their clamshells, Blaw-Knox releases an illustrated, 8 p. folder, Form No. 2510.
256DD Blaw-Knox Co.

Cranes, Jib.....Introduces first power-rotated jib crane with lifting capacities up to 15 tons. Big loads are handled easily with electric-powered, self-supporting jib crane. Request Form No. 714-1-6.
256EE R. G. LeTourneau, Inc.

Cyanide Handling..... "Handling and Feeding of Aero Brand Cyanide" includes sections on: chemical and physical properties; transportation; unloading and storage of drums; general notes on feeding cyanides; etc.
256FF American Cyanamid Co.

Detectors, Metal.....New Dings Universal Series Metal Detector will detect the presence of all magnetic metals in materials that pass through the Detector Search Coil. For details, request product literature.
256GG Dings Electronics.

Docks, Loading, Portable.....A new idea in loading & unloading motor trucks is described & illustrated in a 4 p. booklet. Includes advantages, specifications & suggested applications. Bulletin No. 151.
256HH Raymond Corp.

Drums, Acid.....Seamless chimes of Hackney two-piece acid drums harbor no acid traces between shipments. These drums are rugged & durable. Request Drum and Barrel Catalog & minimum quantity data.
256II Pressed Steel Tank Co.

Drums, Magnetic.....Eriez magnetic drum is an unbeatable unit for extracting tramp iron from materials conveyed in spouts, chutes, spiral conveyors, etc. Find complete information on drum in Bulletin B-601.
256JJ Eriez Mfg. Co.

Drums, Magnetic.....For the automatic removal of tramp iron or ferrous material from gravity or conveyor transported products. Includes diagrams, performance data, application guides, etc., in Bulletin MD-200.
256KK Homer Mfg. Co.

Dumpers, Drum.....Production up—costs down with Gifford-Wood's Drum Dumper—portable . . . semi-automatic . . . strong. Company offers their idea book on engineered materials handling systems.
256LL Gifford-Wood Co.

*From advertisement, this issue.

1956 INVENTORY

Elevators, Manlift.....Company makes available an illustrated folder describing the four standard models of Humphrey Manlift Elevators. Includes data on operating and safety features. Request Folder No. HF-55.
257A Humphrey Elevator Co.

Handling & Packaging.....Articles on latest money-saving developments in handling lumber, unitizing brick & tying forms in concrete construction appear in the Spring 1956 issue of "The Signode Seal."
257B Signode Steel Strapping Co.

Idlers, Suspension.....Illustrated reference describes Limberoller conveyor idlers. These flexible, two-bearing suspension idlers are ideal for handling corrosive materials. For complete information request Bulletin LD-103E.
337g *Joy Mfg. Co.

Latex Handling, Synthetic.....Fully illustrated, 8 p. reference includes sections on: shipping of latex; storage of latex; transfer of latex; etc. Request "Storage and Handling of Synthetic Latex," Ref. No. 55-264.
257C Goodyear Tire & Rubber Co.

Lifts, Hydraulic.....Illustrates and describes new line of multi-purpose, manually propelled, hand and battery-powered hydraulic lifts with capacities from 500 to 2000 pounds. Covers features and specifications.
257D Oster Mfg. Co.

Liquids Handling Equipment.....Describes Ellisco's complete line . . . for petroleum, chemical, mine, railroad & construction industries. Heavy duty measures, funnels, delivery cans, etc., illustrated. Bulletin 63.
257E George D. Ellis & Sons.

Loaders.....Company announces the introduction of the TL-11 Tractoloader. It has front wheel drive for better traction and is equipped with rear wheel power steering. Request more complete information.
257F Tractomotive Corp.

Loaders, Industrial.....Describes Model NL-50 front wheel drive Napco Loader . . . with no clutch shifting for directional control. Includes the numerous features and specifications in illustrated Form NCE101.
257G Napco Construction Equip. Div.

Loaders, Truck.....Shows where man-equipment hours may be saved with Lodal . . . the multi-purpose hydraulic truck loaders. 3-thousand pounds capacity—loads one truck or many. Features and specifications.
257H Lodal, Inc.

Loading Arms.....Use Chiksan Loading Arms for handling tough corrosives. The time proven answer where the accent is on service, safety and speed. Be sure of maintaining smooth production schedules. Chiksan Catalog.
257I Chiksan Co.

Loading Assemblies.....Features: compactness, convenience, fast delivery, smooth operation, long service life & minimum pressure drop. Details on spring-balanced & counter-balanced assemblies in Catalog F-7.
257J OPW Corp.

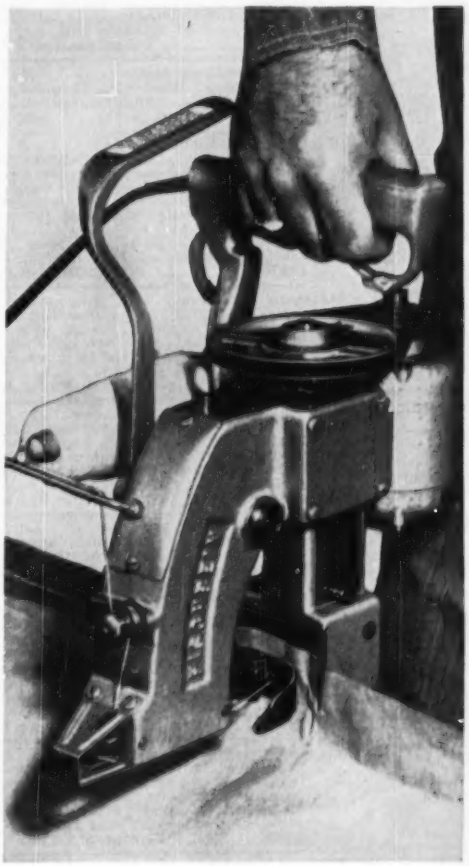
Magnets.....“Magnetic Ideas From Eriez” contains case histories explaining how various firms use permanent, non-electric magnets to prevent iron contamination in their products. 24 p. Brochure B-213.
257K Eriez Mfg. Co.

→ Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

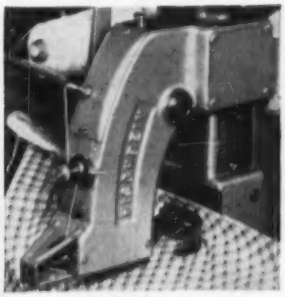
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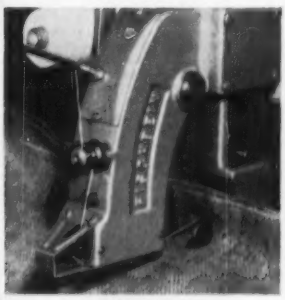
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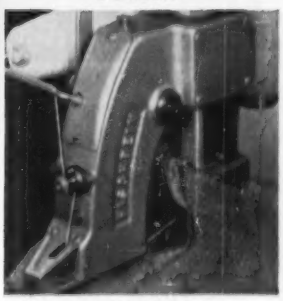
PAPER



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Total Weight only 10½ lbs.

- No installation necessary . . . . plug into any outlet.
- Closes average 100 lb. bag in less than 6 seconds.
- Simple to operate and maintain.
- Can be suspended for stationary use.
- Lowest priced bag closer on market.

FOR DETAILS, MAIL THIS COUPON NOW

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Packaging & Handling Equipment — 1956 INVENTORY

TECHNICAL LITERATURE

Magnets—

Tractor-Loaders

Magnets.....Describes the line of electric and non-electric magnets for installation in, on or above material conveying systems and integration with processing machinery. Full details in Catalog C-5000-B.
258A Dings Magnetic Separator.

Magnets.....Covers newly designed line of non-electric Alnico Perma-Plate Magnets which incorporate an entirely new concept of tramp iron removal by the "Dynamic" principle of magnetic attraction. Catalog 1205-D.
258B Dings Magnetic Separator Co.

Magnets, Hopper.....Built in any width desired, magnets efficientiy remove tramp iron which causes machinery damage, fires, and product contamination. Ideal for surge-fed application. Bulletin B-204.
258C Eriez Mfg. Co.

Magnets, Permanent.....To protect products & processing machinery from destructive effects of tramp iron. Readily installed in hoppers, chutes or spouts. Request technical literature.
161e *Prater Pulverizer Corp.

Magnets, Permanent.....Engineers who design & develop products utilizing permanent magnets will find "Permanent Magnet Materials & Their Selection," a practical & convenient reference. Request Manual No. 5-R.
258D Indiana Steel Products Co.

*From advertisement, this issue

If you think Barber-Greene makes only BIG conveyors...

you haven't heard of the...



375 TRANSFER CONVEYOR

★ lengths from 8'
★ widths 18", 24" and 30"
★ handles almost any bulk material

NEW FOLDER

...shows how you can figure your own horsepower and belt width in a minute.



see your B-G distributor or write

Barber-Greene

AURORA, ILLINOIS, U.S.A.

Magnets, Rectangular Separation..... Bulletin on Ohio Super Magnetomotive rectangular separation magnets. Includes performance data, line drawings, schematic & dimensional diagrams, etc. Catalog No. 114.
258E Ohio Elec. Mfg. Co.

Magnets, Suspended.....Rectangular suspended separation magnet cures tramp iron headaches on fast-moving conveyors, particularly when material is wet. Find complete products information in detailed Bulletin 25D.
258F Stearns Magnetic.

Material Handling Methods....."Methods & Ideas" illustrates 48 manhour & space-saving handling operations, & shows various types of Barrett material handling equipment at work. Request Bulletin No. 552.
258G Barrett-Cravens Co.

Materials Handling.....When time is important in handling dry materials in bulk . . . rely on Fuller systems (Fuller Kinyon Airveyor, Airslide, Fuller-Fluxo). Data in "How To Pull Dollars Out of Thin Air."
258H Fuller Co.

Materials Handling.....If you are presently conveying dry, pulverized materials into, through, or out of your plant, get the full story on Fuller-Kinyon—harnessing air to move materials. Bulletin FK-26A.
258I Fuller Co.

Materials Handling, Bulk.....Fully illustrated Folder describes case studies covering bulk handling of flour, sugar, cake mixes, carbon black, phosphor powders, cement, and 17 other basic materials.
258J Tote System.

Materials Handling, Bulk-Flo.....Equipment designed to reduce handling costs on wide range of materials. Features ability to feed, convey, elevate in one compact, fully enclosed assembly. 28 p. Book 2475.
258K Link-Belt Co.

Materials Handling Equipment..... Folder covers company's line of tote boxes, conveyors, cranes, elevators, lifts, pallets, racks, shipping containers, skids, tanks, tractors, trailers, trucks, etc. Folder No. 1206 MH.
258L Market Forge Co.

Materials Handling Equipment.....A new and completely revised booklet features engineering and application data on versatile line of overhead materials handling equipment. Request illustrated Bulletin 2008-L.
258M Cleveland Crane & Engrg. Co.

Materials Handling Equipment.....50 p. contains technical data, descriptions & photos of vibratory equipment, feeders, conveyors, power tools, shaft seals, selenium rectifiers, etc. Condensed Catalogue 5510.
258N Syntron Co.

Movers.....Moving heavy equipment is now a quick, safe, & easy in-plant operation with Mighty Movers. Eliminate skids & pipes, cut make-ready time 75%, work easily on rough floors, simple to use, etc. Illustrated, 4 p.
258O Mighty Mover Co.

Overloaders.....Gives full description of Merton overloader. Well-illustrated & in two colors, brochure includes application suggestions, performance reports, optional equipment & specifications. Available on request.
258P Seaboard Equipment Co.

Packaging....."Here's How It Pays to Package in Film Made of Bakelite Polythylene Plastic" illustrates the packaging of farm products, hardware & industrial products, plant, food & drug products, etc.
258Q Bakelite Co.

Packaging....."Aerosols Unlimited" traces development of self-spraying package, discusses pros & cons of push-button containers, tells manufacturers how they can evaluate their products for aerosol package, etc.
258R Sprayon Products.

Packaging.....Offers a new, fully illustrated booklet containing information to help you obtain maximum efficiency from corrugated boxes . . . at minimum cost. Request 24 p. "How To Test Corrugated Boxes."
258S Hinde & Dauch.

Packaging & Carloading.....Offers a 44 p. guide of usable facts to help you lower freight bills, end pilferage, reduce loss and damage claims, reduce container costs and speed packaging and shipping.
258T Signode Steel Strapping Co.

Packaging, Collapsible Tube.....Illustrated, 16 p. brochure, "Tube Talk," includes sections on: what are collapsible tubes; tube terms; choosing the right tube; selecting the metal; standard tube sizes and necks; etc.
258U National Collapsible Tube.

Packaging, Corrugated....."How To Ship More Economically in Corrugated Boxes" describes design of a corrugated box, testing, storage, shipping room layout, packing, sealing, stacking and loading. Illustrated, 24 p.
258V Hinde & Dauch.

Packaging Machines..... Whiz-Packer Volumetric Filler with Horizontal Feed is designed to minimize breakage & tolerance in a broad range of products, yet handle with a maximum of speed. See equipment report.
258W Frazier & Son.

Panels, Pulsating.....Automation starts with PneuBin. It will solve your flow stoppage problems and reduce your operating expense. Request informative product literature and a "Flow Stoppage Report."
258X Gerotor May Corp.

Plates, Magnetic.....New reference describes features & applications of Homer Permanent Magnetic Plates. Includes application diagrams, performance information & description of complete line. Bulletin PL-250.
258Y Homer Mfg. Co.

Platforms, Work.....New hydraulic lift work platform provides high standards of safety and convenience for average work levels up to 15 feet. Request additional information on Ballymore Platforms.
258Z Ballymore Co.

Pneumatics....."Pneu-Vac" is one of the most modern negative-pressure pneumatic systems available. It conveys loads, & unloads granular, pulverized & flaky materials in large volumes. Request full details.
190 *Sprout-Waldron Co.

Proportioning, Automatic.....Furnishes information on Richardson's automatic proportioning systems. Includes complete case history file of Select-O-Weigh installation in industry. 28 p. Bulletin 0251.
258AA Richardson Scale Co.

Pulleys, Magnetic.....Rugged construction & powerful magnetic strength give trouble-free operation & efficient protection against tramp iron damage to costly crushers, grinders, stokers, etc. Bulletin 501.
258BB Eriez Mfg. Co.

Pulleys, Magnetic.....Fully illustrated, 16 p. describes line of Electro-magnetic pulleys & pulley separators. Includes a new simplified pulley selection method & detailed specifications. Bulletin No. 303-C.
258CC Stearns Magnetic.

Pulleys, Magnetic.....Features: pulling power, no operating expense, operates anywhere, & the belt stays put. For tramp iron removal, you get protection for your plant & product. Request Bulletin No. 350C-1.
258DD Stearns Magnetic.

Ramps, Bridges.....A new improvement called the free floating retractable stop has been made on the One Man Bridge Ramp. Eliminates breakage or bending of ramp's locking device and stops. Request details.
258EE Elizabeth Iron Works.

Scales.....Releases illustrated folder on various types of suspension hopper scales which are widely used for mixing, proportioning or batching of various ingredients in many industrial fields. Bulletin 82.
259A Webb Corp.

Scales, Automatic Bagging.....Fully describes the Richardson Model E-50 automatic bagging scale. Includes details of its numerous features, tested design, operation, capacity, etc. Request Bulletin 3749A.
259B Richardson Scale Co.

Scales, Bagging.....Covers improved FFFP Bagging Scale. Includes new features, such as a pneumatic gate assist & a belt feeder which permits high bagging speeds. Illustrated Product Data Sheet No. 5001.
259C Richardson Scale Co.

Scales, Checkweight.....Describes new checkweigher utilizing flexual platform with strain-gage load cell weight transmitter and integrally mounted belt conveyor. Features, applications, etc. Request Catalog 21.
259D Weighing Components.

Scales, Dial.....Features: streamlined, easy to read, easy to use and they have the new, patented Floaxial dial mechanism that assures enduring accuracy. For the complete story on line, request new Bulletin.
259E Fairbanks-Morse & Co.

Scales, Pulp Density.....Developed to overcome disadvantages of other methods of determining density, specific gravity of pulps, liquids & dry solids, & percent solids of pulps. Covers features & operation. 4 p.
259F Mine & Smelter Supply Co.

Scales, Truck.....Available with Toledo Printweigh for recording weights on tickets, strips or sheets. Four-section scales are built to weigh the heaviest & largest highway vehicles. Full details in Bulletin 2417.
259G Toledo Scale Co.

Scoop, Power, Automatic.....Cuts loading time 30 to 50%, light in weight, easy forward and backward motion, one-man operation, no slack in cable assuring greater safety. For complete details write for Bulletin 863.
259H Jeffrey Mfg. Co.

Separators, Magnetic.....Presents 16 p. fully illustrated reference covering line of non-electric permanent magnetic separators for removal of tramp iron. Includes data on Magnalarm. Request Catalog 17.
259I Eriez Mfg. Co.

Separators, Magnetic.....Ferrofilters remove contaminating ferrous particles from liquids and slurries by magnetic action with a maximum of efficiency and a minimum of cost. Request detailed Bulletin 16-E.
259J S. G. Frantz Co.

Separators, Magnetic.....Type K magnetic separator provides powerful magnetic field which attracts feebly magnetic particles. Purifies & concentrates bulk chemicals where other methods fa.l. Bulletin No. 701B.
259K Stearns Magnetic.

Separators, Magnetic.....Emerson magnetic separator utilizes powerful, permanent magnets ingeniously arranged for high efficiency—has no moving parts—requires no extra power—is easily cleaned—etc. Full data.
259L Emerson Mfg. Co.

Skids.....Manufacturers of material handling equipment announce availability of literature on Steeleg Skids. Any width and length...plain, box-top or stake platform. Request illustrated Catalog No. 4882.
259M Barrett-Cravens Co.

Slakers & Feeders.....Explains accurate lime feeding & complete slaking with Omega lime slaker & feeder. Contains installation & product photos, data on dry feeders & lime slakers, advantages, etc. Bulletin 40-E1B.
259N Omega Mach. Co.

Slings.....Newly revised informative bulletin covers slings varying from ½ ton safe load to 48.7 tons safe load. If you have the problem of lifting loads with overhead cranes and hoists, request Bulletin No. 5308-R.
259O MacWhyte Co.

Sodium Handling, Metallic.....Illustrated 44 p. brochure. "Handling Metallic Sodium On A Plant Scale," contains data such as details of typical sodium-using processes; details of equipment installation, insulation.
259P U. S. Industrial Chem. Co.

Storage Terminals.....For the full story of how bulk liquid storage at Hess terminals can reduce your distribution or manufacturing costs, request company's new illustrated reference, "You Can Depend On Hess."
259Q Hess, Inc.

Tank Storage, Plasticizers......"The Bulk Tank Storage of Plasticizers" includes: materials of construction useful in setting up bulk tank storage units, storage tanks, pipe lines, etc. Tech. Bulletin O-69.
259R Monsanto Chem. Co.

Tanks.....Illustrated Bulletin describes the new Cherry-Burrell Open Top Type "O" stainless steel single shell tanks. Includes 3 models, for storage, side mixing, bottom mixing. Gives dimensions & capacities. Bulletin G-502.
305e •Cherry-Burrell Corp.

Tanks.....Illustrated bulletin describes the new Cherry-Burrell Type "C" stainless steel single shell tanks, for heating and cooling. Contains specifications, dimensions and capacities. Bulletin G-506.
305f •Cherry-Burrell Corp.

Tanks, Pla-Tank.....Manufactured from long-life, resin-bonded glass fiber laminate, offers a solid uniform material. Resistant to wide variety of acids, fumes & temperatures. Request descriptive Data Sheets.
259S Chemical Corp.

Tanks, Stainless Steel.....Company makes available descriptive literature covering their line of highest quality stainless steel tanks (all types—storage—process) and agitators (all types—portable—built-in).
259T Arthur Colton Co.

Tanks, Storage.....Describes full line of distilled water storage tanks. Covers features of tanks, available in aluminum or tinned copper & in 7 sizes, from 10 to 500 gallons. Illustrated Bulletin No. 915.
259U Precision Scientific Co.

Tanks, Weighing.....Automatic weighing tanks, widely used in the agricultural chemical industry, have now been adapted to the liquid chemical field. Measure by weight rather than by volume. Details on request.
259V Davidson-Kennedy Co.

Toggle Stands, Conveyor.....Versatility and efficiency have been increased by the addition of toggle stands to two models of the aluminum Stevedore, Jr. Power Conveyor. Information and product literature on request.
259W Rapids-Standard Co.

Tractor-Loaders.....TL-6 Tracto-Loader features a short turning radius & combines a tip-back bucket with hydraulic torque converter drive & clutch-type transmission. Illustrated features & specifications.
259X Tractomotive Corp.

VIBROLATOR®

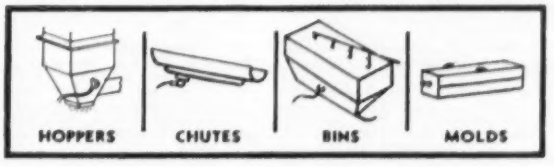
the strong silent type VIBRATOR



FOR MOVEMENT OF WET OR DRY MATERIAL

Only one moving part does the job — a rolling ball driven by compressed air or steam. Needs no oil or filters. The VIBROLATOR moves materials down chutes, out of bins and hoppers, actuates screens, brings up entrained air in wet plaster, concrete and granulars. Priced from $9 to $88 in malleable iron, (nonferrous in some sizes), from "pocket-watch" size to the 10 lb. DV-51. Write for complete catalog today.

MARTIN ENGINEERING COMPANY
McGraw Place, • Neponset, Illinois



TECHNICAL LITERATURE

Tractor-Loaders—

Weight Control

Tractor-Loaders.....Low carry, short turning, high lift, more output on all materials handling job. Hydraulic torque converter drive, clutch-type transmission. Catalog and demonstration on Model No. TL-10.
260A Tractomotive Corp.

Tractor-Shovels.....The Michigan 175A handles bigger jobs . . . cheaper. Announces the availability of a 12 p. Tractor-Shovel booklet containing explanation and cutaway drawings of the Michigan power train.
260B Clark Equipment Co.

Tractor-Shovels.....Two new Payloader tractor-shovels (Model HU 1 cu. yd. & Model HH 1¼ cu. yd.) offer many features: more horsepower; easy to operate; accessibility; torque-converter drive; etc. Full data.
260C Frank G. Hough Co.

Tractor-Shovels.....The HA "Payloader" & the larger model HAH do the work of 4 previous units. Ideal for any bulk materials you have to scoop-up, carry, load, dump, stockpile or spread. Request data.
260D Frank G. Hough.

Tractor Trailer Systems.....The Guide-O-Matic tractor is completely automatic . . . neither operator nor physical connectors are required for operation. Find complete data in illustrated Bulletin No. 552-1.
260E Barrett-Cravens Co.

Tractors, Trackmobile.....The Whiting heavy-duty Trackmobile moves many heavily loaded freight cars at low cost. Describes tractive effort, specifications, dimensions, features, etc., in Bulletin No. T-115.
260F Whiting Corp.

Trailer-Tanks, Glassed Steel.....New trailer-tank saves time and money with liquid transfer . . . eliminates drying and packaging . . . saves the trouble of returning your product to a liquid upon arrival. Data 29.
260G Pfaudler Co.

Traps, Pipeline.....Illustrated brochure on new liquid-handling magnetic pipeline traps. Gives construction information, dimensions and installation instructions for both models. Request Bulletin No. P-605.
260H Eriez Mfg. Co.

Trippers, Conveyors, Belt.....Company announces a new, belt conveyor tripper accommodating long center roll, deep-troughing idlers for use with belt conveyors handling light materials. See Bulletin 156.
260I Stephens-Adamson Mfg. Co.

Trolleys, Ball Bearing.....Covers new line of trolleys for overhead conveyors——one of the most versatile & flexible conveying mediums. Includes description & dimension data on the entire line in 20 p. Book 2536.
260J Link-Belt Co.

Trucks, Aluminum.....Lightness, torsionally flexible bed construction and exclusive casters are chief Magcoa/Tobey aluminum truck features described in new Folder. Includes photos and specifications.
260K Magnesium Co. of America

Trucks, Fork.....Fully illustrated literature describes all the specifications and aspects for efficient operation of the new Yale K-46 electric, standup, hydraulic lift truck. Bulletins Nos. 5111, 5112 and 5113.
260L Yale & Towne Mfg. Co.

Trucks, Fork.....Company makes available upon request descriptive literature covering their Telescopic Powerox TTF-20T . . . telescopic tilting fork truck. Capacity to 3000 pounds. Illustrated Bulletin No. 551-2.
260M Barrett-Cravens Co.

Trucks, Fork.....New electric powered trucks are specifically designed for use where low headroom is a problem. No sacrifice of operator visibility & no change in operating efficiency. Request details.
260N Elwell-Parker Electric Co.

Trucks, Fork Lift.....Trac-Lift 50 speeds lifting, transporting & stacking of heavy, bulky materials. Handles loads up to 5000 lbs. Operates over smooth or rough, paved or unpaved areas. Full product information.
260O Piper & Paine.

Trucks, Fork Lift.....Safety fork lift truck features: hydraulic starter; mechanical gauges, water-cooled manifold & mu er; runs on low-volatile fuel, etc. For all the facts, request literature.
244 *Allis Chalmers Mfg. Co.

Trucks, Fork Lift.....Profusely illustrated Folder describes Lamson Mobilift "Sit-down" Fork Trucks with Hydra-Lizer hydraulic suspension system and Mobil-Matic automatic drive. Features and advantages.
260P Lamson Mobilift Corp.

Trucks, Hand.....The Lite-N-Tuff hand truck is specially designed to reduce effects of load jar on fragile cargo when moving over rough ground, jumping curbs, etc. Features pneumatic tires. Makes available data.
260Q Hamilton Caster & Mfg. Co.

Trucks, Hand.....New "Hi-Lift Platform" Hand Truck offers load security & fingertip controls while maintenance is made easy. Travels at 3 m.p.h. empty & 2.2 m.p.h. fully loaded. Request details.
260R Clark Equipment Co.

Trucks, Industrial.....Offers the most complete line of industrial trucks . . . The Master Line. Illustrated booklet covers electric fork trucks, electric tiering trucks, stackers, cranes, etc. Circular 80-203.
260S Lewis-Shepard Products.

Trucks, Industrial.....The L-S Jackstacker is the most flexible and easiest to operate "walkie" in the field. Comes in straddle-type, pallet, platforms, etc. For complete details request Catalog No. 34.
260T Lewis-Shepard.

Trucks, Industrial.....New Model B-224 Lamson Mobilift Industrial Truck features added maneuverability & increased safety factors. New Mobilift also has double frame construction. Literature upon request.
260U Lamson Mobilift Corp.

Trucks, Industrial Lift.....Illustrated Folder describes new KGA51 series of industrial lift trucks with Yale Torque Transmission Features: greater driver efficiency; smoother operation; longer truck life; etc. 4 p.
260V Yale & Towne Mfg. Co.

Trucks, Lift.....Compact new Hyster QN-20 Monomast Lift Truck is claimed to be an ideal "work horse" for both inside & outside production. Offers faster load placement & greater safety. Request Form No. 1452.
260W Hyster Co.

Trucks, Low-Lift.....Low-lift Model "M" rider type trucks are available in both the pallet type for handling single face or double face pallets & the platform type for skid platforms. Circular 35F.
260X Lewis-Shepard Products.

Trucks, Walkie.....This new truck is powered by four conventional automotive type batteries, connected in series to provide 24 volt operation for ramps & high speed travel on long hauls. Request Bulletin No. 910.
260Y Raymond Corp.

Trucks, Walkie Electric.....Design of this new truck features compactness & safety for the operator. Other specifications: 3 travel speeds, easy maintenance & lightweight construction. Request Bulletin 860.
260Z Raymond Corp.

Trucks, Materials Handling.....New L-S HydraFork with extendible forks gives you maximum floor protection in minimum (6") aisles. L-S has the only complete line of materials handling trucks on the market. Catalogs.
260AA Lewis-Shepard Products.

Trucks, Pallet.....Describes hand hydraulic pallet truck (Model EX)... for single or double faced pallets. 2500 pounds up to 6000 pounds capacity. For complete product information, request Catalog No. 535.
260BB Barrett-Cravens Co.

Trucks, Pallet.....The shortest "walkie" electric pallet truck on the market—only 25¾" longer than the fork length—is fully described with photographs, drawings & specifications in new Circular No. 34C.
260CC Lewis-Shepard Products.

Trucks, Platform.....Thoroughly illustrated folder features the Model PO-40 . . . a walking type, battery-powered unit designed to speed the moving and stacking of skids, box tops, cases, crates, etc. Bulletin 551-3.
260DD Barrett-Cravens Co.

Trucks, Straddle.....Offers a straddle type tiering truck in 4000 lb. capacity. Increased capacity made possible by adoption of a heavy duty frame, tandem load wheels, special thermal controller motors, etc. Bulletin 831.
260EE Raymond Corp.

Unloaders, Boxcar.....Describes the Kar-Flo boxcar unloader, which utilizes oscillating motion to empty grain & other free-flowing bulk materials from railroad boxcars at rate of 4 cars per hr. Folder 2645.
260FF Link-Belt Co.

Unloading, Tank Cars, Liquid Chemicals.....Covers: aqueous ammonia; lime sulfur solution: sodium silicate solution; & sodium sulfied, liquid. See "Unloading 'Non-Regulatory' Liquid Chemicals from Tank Cars."
260GG General Chem. Div.

Unloading, Tank Cars, Rubber-Lined.....The following chemicals are covered: liquid alum; aluminum chloride; muriatic acid; and phosphoric acid. For details, see "Unloading Rubber-Lined Tank Cars."
260HH General Chem. Div.

Unloading, Tank Cars, Steel.....Chemicals covered: electrolyte; hydrofluoric acid; mixed acid or nitrating acid; oleum; spent acid; sulfuric acid; & fluosulfonic acid. See "Unloading Steel Tank Cars."
260II General Chem. Div.

Vibrating Equipment.....Presents 232 p. fully illustrated catalog—a complete and concise reference book covering electric and mechanical vibrating equipment and magnetic separators. Request Catalog No. 870.
260JJ Jeffrey Mfg. Co.

Vibrators.....Vibrolator moves materials down chutes, out of bins and hoppers, actuates screens, brings up entrained air in wet plaster, concrete and granulars. For further information, request complete catalog.
259 *Martin Engrg. Co.

Vibrators, Electric.....Fully describes & illustrates complete company line. Provides specifications & prices, & covers Cleveland's silent, Eccentric Weight Vibrators & Electro-Magnetic Vibrators. Catalog No. 11.
260KK Cleveland Vibrator Co.

Weighing Systems.....Supply basic data for your accounting system. Records that originate at scales directly affect costs, inventories & customer billings. For complete information request our Bulletin No. 2036.
260LL Toledo Scale Co.

Weight Control.....Through Toledo's electronics system of remote data handling, weight data is no longer limited as to form, or close proximity to the point of origin. Bulletin on new remote digital weights.
260MM Toledo Scale Co.

Coating, Pipe

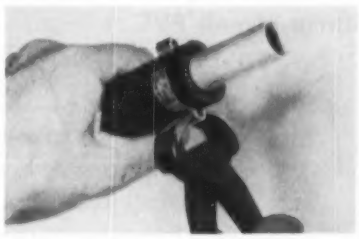
Protects acid-carrying pipeline against damage. (261A)

. . . A reinforced plastic coating has been developed to protect high-silicon iron-alloy pipe against mechanical shock and damage. It can withstand the corrosive attack of chemicals or fumes which might escape from damaged pipe or adjacent equipment.—*Bakelite Co., New York, N. Y.*

Clamps, Hose

Can be applied within 3 sec. (261B)

. . . Using ordinary pincers, a new general purpose hose clamp can be attached in place within 3 sec. to give lasting and positive clamping action. Independent tests on ¾-in. wire-braided hose have shown no slippage or loss of clamping action at hose burst pressures in the 12,000 psi. range. Clamp is round with U-shaped lugs.—*Circle Pump Co., New York, 6, N. Y.*



Compressor, Air-Cooled

Big-unit features in 20 hp. size. (261C)

. . . Featuring a big-compressor channel-valve design the new model 20-T air-cooled compressor offers operating efficiency, economy, dependability. Other advantages claimed for this 20 hp. unit: greater intercooling capacity, new cyclone flywheel fan, three cylinder construction, cylinder sizes engineered for the most air at desired pressure. Compressor can be direct-coupled to a 1,200 rpm. motor.—*Ingersoll-Rand, New York 4, N. Y.*

Coupling, Tank-Car

For quicker, more efficient unloading. (261D)

. . . Tank cars of petroleum or liquid can be unloaded with greater ease using a new nonferrous elbow coupling. Lighter weight—66% lighter than the malleable iron or bronze coupling now used—allows one man to do the job without wrenches.—*Atlantic Metal Hose Co., Inc., New York 34, N. Y.*

Exhausters

Of corrosion-resistant Haveg. ((261E)

. . . Blowers to move corrosive fumes through duct systems now are built with Haveg material to resist chemical attack. Type M has a housing molded completely from Haveg material; Type L has a cast housing lined with the Haveg material. All the six-bladed blast wheels have a non-ferrous core coated with it.—*Champion Blower & Forge Co., Lancaster, Pa.*

Faucet, Drum

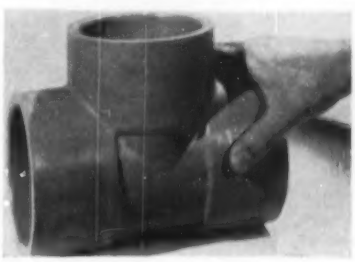
Cheaper, lighter, more durable. (261F)

. . . Drum faucet fabricated from polyethylene is cheaper, more durable and lighter weight than regular metal faucets. The plastic faucet operates smoothly and will not leak, regardless of temperature or type of material with which it is used.—*Multi-Meter Corp., Toledo 12, Ohio.*

Fittings

In 3- and 4-in. sizes molded of unplasticized PVC. (261G)

. . . Available for the first time is a full line of injection molded 3- and 4-in. fittings. These larger size fittings are expected to aid the economical erection of larger size PVC piping system which are now being planned in the chemical, petroleum and allied fields. Initial cost of such systems is less than piping of other materials usually employed where acute corrosion problems are met.—*Tube Turns Plastics, Inc., Louisville, Ky.*



Fittings

For plastic pipe. (261H)

. . . Fittings for polyethylene pipe are injection molded from rigid unplasticized polyvinyl chloride. The fittings are presently available in polyethylene-to-polyethylene couplings and polyethylene-to-metal adapters, ¾ and 1 in.—*Wilmington Plastics Co., Wilmington, Del.*

Fittings, Impact

Assures long life, low friction loss. (261I)

. . . Body of the fitting is cast from a hard, chrome-iron alloy—Ashcolite—which provides top wear resistance, long life. And the elongated discharge end cuts pipe connection eddies created by sharp turns. In this way the fitting reduces friction loss in pneumatic materials handling systems. Line includes 45- and 90-deg. elbows and 45-deg. lateral fittings in 4, 5, 6, and 8 in. sizes.—*Allen-Sherman-Hoff Co., Wynnewood, Pa.*

Fittings, Pipe

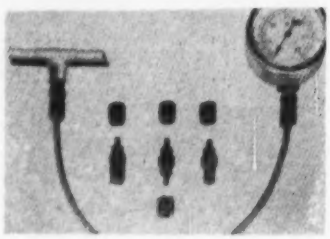
Injection molded PVC for solvent welding. (262A)

. . . The first injection-molded unplasticized-PVC solvent-welding pipe fittings are now available as a complimentary line to Tube Turns threaded fittings. They install easily with a minimum of equipment; recommended for permanent lines.—*Tube Turns Plastics, Inc., Louisville, Ky.*

Fittings, Small PVC

For use with flexible tubing. (262B)

. . . A new line of PVC fittings and adaptors are suitable for tubing-to-tubing and tubing-to-pipe connections in ¼ to ½ in. range. They may be used for many types of flexible liquid- and air-tight instrument tubing connections; in air or fluid actuated devices; for connecting direct reading pressure gages to tubing systems and for transmission of fluids and gases.—*S. & C. Mfg. Co., Cincinnati 13, Ohio.*



Fittings, Stainless

Heavy duty. (262C)

. . . Heavy-duty stainless steel fittings are now available from stock in threaded or weld ends for 2,000, 3,000, 4,000 and 6,000 psi. All fittings are permanently identified with size, alloy, pressure rating, heat code and trademark.—*Camco Products, Inc., North Haven, Conn.*

Fitting, Tube

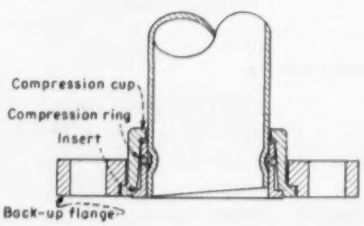
Installs without disassembling. (262D)

. . . A complete line of fittings, including unions, tees, elbows and connectors, tagged Self-align can be installed without disassembling. Tubing is merely inserted in the fitting until it bottoms and then the nut is tightened.—*Weatherhead Co., Ft. Wayne Div., Fort Wayne, Ind.*

Flange, Pipe

Installs without special tools. (262E)

. . . Newly developed is a flange for use with Schedules 5 and 10 pipe. Only a blank flange and the usual bolts are needed to compress the assembly into a finished Van Stone type fitting. Elements of the complete unit are a back-up flange, a compression cup, a rubber or Teflon O-ring, insert ring, compression ring.—*Star Tank & Filter Corp., New York, N. Y.*



Hose, Acid

For highly corrosive acids. (262F)

. . . New Hysunite hose is designed to handle heavy concentrations of sulfuric, nitric and chromic acids. Hose can carry sulfuric acid up to 96% concentration, nitric acid up 70% and chromic acid up to 100%. Conventional acid hose would last hours in contrast to Hysunite which has a months-long work life.—*Goodyear Tire & Rubber Co., Akron, Ohio.*

Joint, Ball Pipe

Lighter, stronger, cheaper. (262G)

. . . New ball pipe joint is available in 8-, 10- and 12-in. sizes. Joint provides 15 deg. angular flexing, is unaffected by exposure for 45 min. to 950-1,200 F. temperature, resulting from fire. General purpose, corrosive service or high temperature gaskets. —*Barco Mfg. Co., Barrington, Ill.*

Meter, Flow

Simple, low-cost design. (262H)

. . . A new fabricated-insert Dall flow tube eliminates one pair of flanges found in the cast design. Fabricated design combines the proved advantages of the Dall flow tube profile and the insert-flange type of mounting.—*Builders Providence, Inc., Providence, R. I.*

Nozzle, Spray

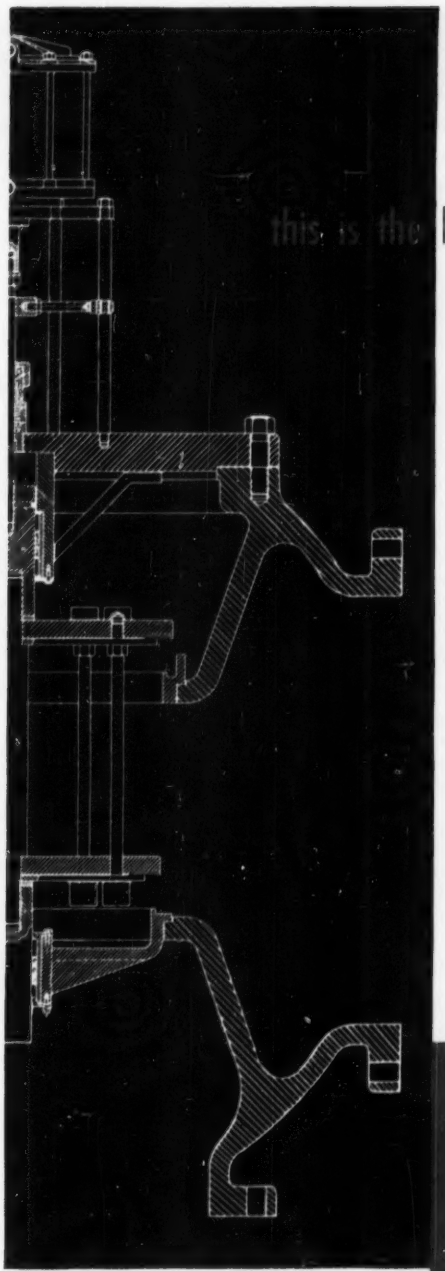
Non-clogging, self-cleaning. (262I)

. . . Employing flexible orifices, a new spray nozzle is claimed not to clog regardless of the amount of fine suspended matter carried into the orifice. This spray nozzle has been made a standard item for all Carrier spray-type air conditioners.—*Carrier Corp., Syracuse, N. Y.*

Orifice Plate

For large-flow gas measurements. (262J)

. . . Large 60-in. segmental orifice plate has been built for measuring flow of coke oven gas in one of the larger steel plants. Segmental design gives accurate flow measurement despite foreign substances which sink to the bottom of the line.—*Daniel Orifice Fitting Co., Los Angeles, Calif.*



this is the largest double-seated control valve ever made

When you are talking *big* control valves, talk to Kieley & Mueller. K&M is the largest manufacturer of the big ones, control valves above 16 inches. Standard globe-type valves are available in 20, 24, 30 and 36 inch sizes; even larger valves will be produced on special order.

This 36-inch double-seated angle valve closes snugly on giant Teflon seats. The inner valve positions responsively, gliding on special roller-slide bearings. It's massive, but is operates protected by a K&M patented torque resistor. Beyond the problem of size, this valve is mounted on its side, and it has been performing creditably for over four years.

BIG or small, if it's control valves, you'll like the pitch-in, helpful approach of your local K&M representative . . . plus capable engineering and manufacturing follow-thru at the K&M plant.

Write for Bulletin CV-53.



ABOVE: Partial cross-section of K&M 36-inch valve showing general construction.

AT RIGHT: Actual size of a 36 inch valve can be visualized from this illustration of a workman inside the valve body performing finishing operations.

K&M

KIELEY & MUELLER, INC.

64 Genung Street • Middletown, New York

78th Anniversary . . . Oldest U.S. Pressure and Level Control Valve Manufacturer

Pipe, Armored

Made of impervious graphite. (264A)

. . . Pipe and fittings of Impervite impervious graphite are now available with a fibrous glass armor. Use is recommended wherever increased operating safety is desired for personnel and equipment. All members of the new line have the same dimensions as nonarmored material. Thickness of armor varies between 1/16 and 3/32 in.—*Falls Industries, Inc., Solon, Ohio.*

Pipe, Armored Glass

Holds in case of glass failure. (264B)

. . . Pyrex brand armored glass pipe features a new type of Fiberglas protective coating designed to hold the glass together in case of failure. Armor sleeve will carry the rated load of the pipe indefinitely, it is said, despite only 1/16th thickness.—*Corning Glass Works, Corning, N. Y.*

Pipe, Plastic

In five pressure ratings. (264C)

. . . Users now may purchase Kralastic pipe to meet specific job requirements with working pressure ratings of 50, 75, 100, 125 or 150 lb. Thus, you can select the pressure-rated pipe you need without paying for more expensive high-working-pressure pipe. A safety margin five times greater than the theoretical burst strength is maintained in all pressure-rated groups.—*Southwestern Plastic Pipe Co., Mineral Wells, Tex.*

Pipe, Plastic

In wide range of sizes. (264D)

. . . Line of Fiberglas-reinforced pipe of epoxy and polyester resins will handle most acid and alkali liquids and fumes, is being used economically in the oil, paper and chemical industries.—*Valco Corp., St. Paul, Minn.*

Pipe, Rigid PVC

Handles chlorine. (264E)

. . . Small piping, fittings and valves of rigid PVC are being used in a chlorine drying and liquefaction plant. The rigid, non-plasticized material in these Ryertex-Omicron pipes conveys both dry and moist chlorine gas. Supplied in Schedule 40 and 80 pipe sizes, rigid polyvinyl chloride can be sawed, threaded, solvent welded and heat welded.—*Joseph T. Ryerson & Son, Chicago, Ill.*



Regulator-Shutoff

For high temperature air or gas. (264F)

. . . A new modified self-regulating globe valve operates both as a hot air shutoff and pressure regulating valve. It can function with inlet temperature over 1,000 F. at an ambient temperature of 500 F. Now used on jet aircraft, valve looks good for industry.—*Hydro-Aire, Inc., Burbank, Calif.*

Spray Head

Distributes low pressure fluids evenly from discharge pipes. (264G)

. . . Assuring an even pattern of wetting from the center out, the Gyrospray offers a number of advantages for distributing water in cooling towers, spray ponds and the like. While producing a controlled spray at pressures under 5 psi. it does not restrict flow from 1-in. feed pipe. In cooling towers the spray pattern covers the width of a standard horizontal cooling section without water loss.—*N. C. Stearns Co., Shreveport, La.*

Stopple

With it, you can cut into main line, divert flow without shutdown. (264H)

. . . Stopple equipment permits desired modifications to be carried out on operating processes without shutdown. The stopple equipment and technique introduce a plug into an operating pipeline through a hole tapped in the pipe wall. System pressure seals the plug in the line to stop flow completely beyond that point. One stopple is used upstream, the other downstream of the section of pipeline to be worked on. A bypass carries system flow around the stoppled-off section. Once the stopples are in place, liquid in the isolated section is withdrawn through another tap before proceeding with the work. Stopples are reported to work well over pressure ranges from 8 oz. to 1,700 psi. at temperatures up to 440 F. on liquids and gases such as crude oil, propane, nitrogen, chemicals, steam.—*T. C. Williamson, Inc., Tulsa, Okla.*

Strainers, Pipe

For oil, gas, air, water and steam. (264I)

. . . Pipe strainers for oil, gas, air, water and steam lines are cast from carbon-moly steel, operate up to 900 psi. and 900 F. Stainless-asbestos gasket between Y-type body and bushing eliminates chance of blowout.—*Armstrong Machine Works, Three Rivers, Mich.*

STAINLESS STEEL*

TO MARK PROGRESS



FITTINGS 1/8" THROUGH 36"

LADISH

...FOR COMPLETE SERVICE IN *Controlled Quality* FITTINGS

When you need service in stainless and alloy fittings... regardless of material specification, size, type, or wall thickness... you can depend on the Ladish Controlled Quality line and the services of your Ladish Stainless Distributor for complete satisfaction.

IPS WELDING FITTINGS		½" through 36" From Sch. 5S to wall thicknesses through 4"
O.D. TUBING FITTINGS		1" through 36" From .049" wall to .250" wall
MSS AND ASA FLANGES		1" through 24" 150 lb. through 2500 lb.
150 LB. SCREWED FITTINGS		⅛" through 4"
FORGED SCREWED AND SOCKET FITTINGS, UNIONS		⅛" through 4" 2000 lb. through 6000 lb.

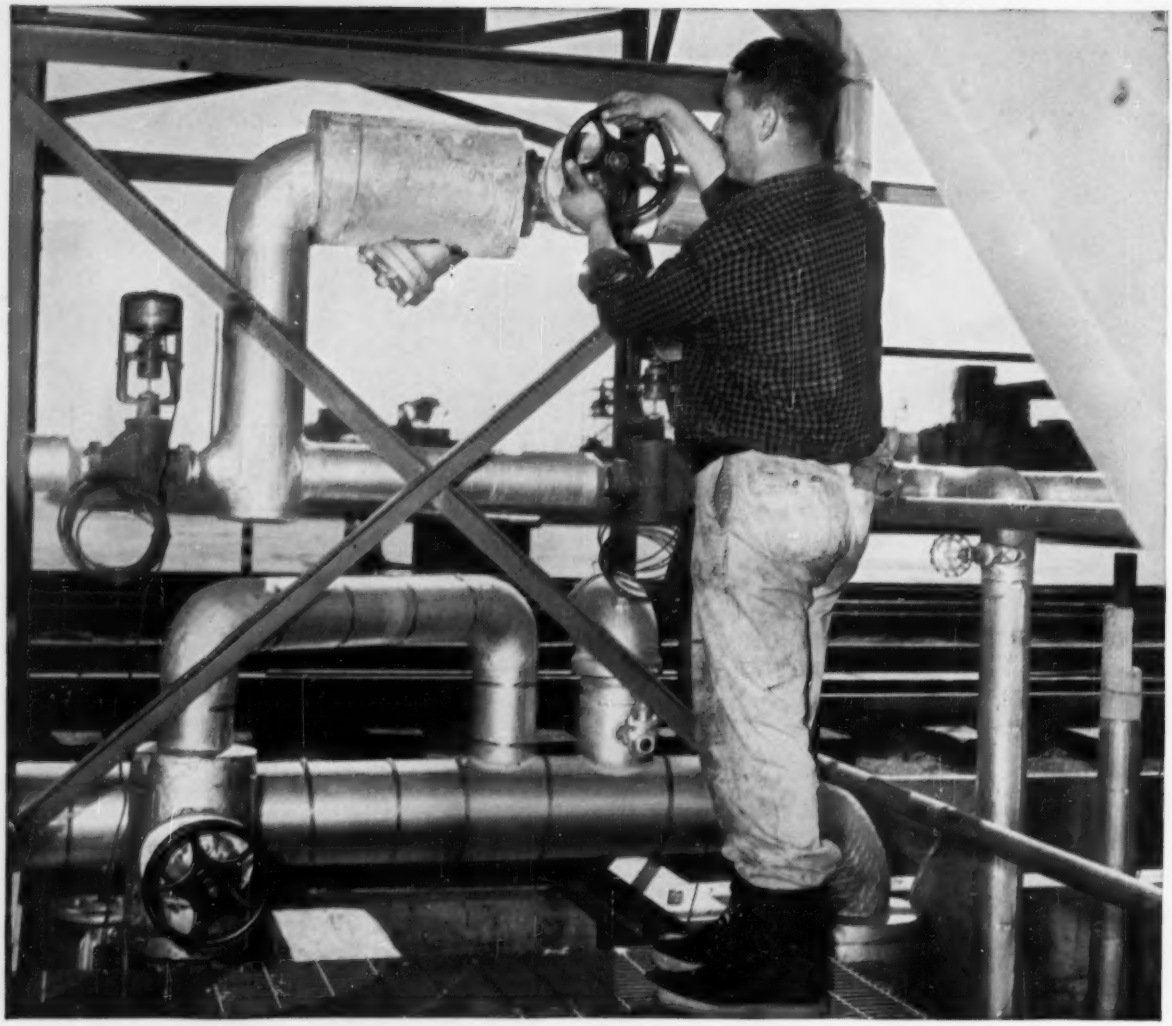
THE COMPLETE *Controlled Quality* FITTINGS LINE

LADISH CO.

CUDAHY, WISCONSIN
MILWAUKEE SUBURB

District Offices: New York • Buffalo • Pittsburgh • Philadelphia • Cleveland
Chicago • St. Paul • St. Louis • Atlanta • Houston • Odessa • Tulsa • Denver
Los Angeles • San Francisco • Seattle • Havana • Mexico City • Brantford, Ont.

*Also furnished in any forgeable material specification including...
Titanium, Aluminum, Copper, Nickel, and Chromium Base Alloys.



His job is to wash tank cars . . . not to contaminate them

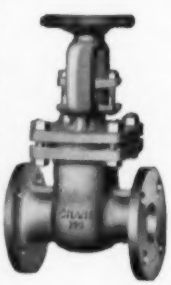
Even a good washer can contaminate a product tank car unknowingly—it all depends on the valves in the washing system.

But that doesn't happen at the Memphis emulsifiers plant of the Atlas Powder Co.

Here, Crane 18-8 SMo stainless steel valves are preventing corrosion and resultant iron pickup from getting into aluminum or stainless steel cars in washing. Such impurities could mean a lot of spoiled product when the cars are loaded.

After more than a year's service on hot detergent solution, the Crane alloy valves show no corrosive effects, and there's no record of damage from iron contaminants. With no maintenance whatever, the valves continue giving positive flow control.

New Crane alloy valves are helping all types of process industries with better flow control and higher contamination corrosion resistance at low cost. They offer many service features that can't be duplicated. Get full information from your local Crane Representative or write to address below. Ask for circular AD-2080.



CRANE VALVES & FITTINGS

PIPE • KITCHENS • PLUMBING • HEATING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

Tank Elements, Plastic

For on-the-job assembly. (267A)

. . . A supply of Polybilt tank sections can now be stocked by users for assembly when current needs arise. There is a choice of 50 styles and capacities. Made of polyester resin and glass fiber laminate, the tanks cost 76¢/gal., a real saving over stainless and Monel at $1.25 and $1.35 respectively.—*Copolymer Corp., Los Angeles, Calif.*



Tubing, Welded

No bead on inside. (267B)

. . . By a new patented process, welded stainless steel and high alloy tubing and pipe are made without any bead along the weld inside the tube. Corrosion resistance is improved and the surface is better for rolling tubes into tube sheets. High or super alloys that previously had to be welded into tube sheets now can be rolled in.—*Trent Tube Co., East Troy, Wis.*

Unions, Flange

With two or four bolts and O-ring seals. (267C)

. . . A line of flange unions is now being offered with choice of two- or four-bolt design and O-ring seals. Used for process, water and refrigeration piping these flange unions seal tightly against fluid pressure. Unions are rated for 3,000 lb. with both screwend and socket welding types available.—*Watson-Stillman Fittings Div., Roselle, N. J.*

Valve, Acid Pressure

Controls corrosive liquids to 1,000 psi. (267D)

. . . Designed primarily as a control valve for highly corrosive acid distribution lines, the new BX115 valve can be used also on any type of corrosive liquid under high pressure. It is made of a special, homogenous nonporous Saran Plastic enclosed in a stainless steel jacket. Comes in two standard sizes.—*Exline Engineering Co., Tulsa, Okla.*



Valve, Ball

Simplified design. (267E)

. . . A new Top Entry ball valve that is simple and easy to install and operate has been introduced recently. It is ideal for handling oxygen and hazardous liquids, as well as water, oil and gas. Valve is available with sweat or screw ends in ½, ¾ and 1-in. sizes. It carries 300 psi. water, oil and gas; 40 psi. LP gas.—*Rockwood Sprinkler Co., Worcester, Mass.*

Valve, Bronze

Seat and disk do not require replacement, regrinding. (267F)

. . . The new LQ600 bronze globe valve lays claim to unprecedented service life under the most difficult conditions. Reason: a new nickel-chromium-silicon seating metal and a flat-seat design. The new Brinalloy material, hard all the way through, resists wear and corrosion even more than 500 Brinell stainless. It makes possible the use of the flat-seat design because its durability allows the seat to be fused permanently into the valve for its entire service life—*Lunkenheimer Co., Cincinnati, Ohio.*

Valve, Check

Water hammer control at low cost. (267G)

. . . Meant to provide water hammer control in a durable unit at low cost this silent check valve operates effectively on a wide variety of hot and cold liquids—oils, gasoline, acids, chemicals, salt water and brine. Only prerequisite: Flow must be constant. —*Williams Gauge Co., Pittsburgh, Pa.*

Valve, Control

Basic valve for many jobs. (267H)

. . . Completely new S-3000 Series of standard control valves is claimed to overcome all present-day limitations. Combination of integral positioner balanced plug, high Cv body, correct spring range, low hysteresis, reversible superstructure and optional tight shutoff is said to make the series the most versatile performer in the control valve field. One basic valve can be used for almost all process locations. —*Hammel-Dahl Co., Providence, R. I.*

Valve, Control

New features for standard model. (267I)

. . . An improved version of a long dependable, standard control valve achieves easier pressure range conversion by introducing a gasket seal at the diaphragm flange of the valve. The number of flange bolts has been decreased by approximately 50% in order to save maintenance time on plumbing.—*A. W. Cash Co., Decatur, Ill.*

Valves, Diaphragm

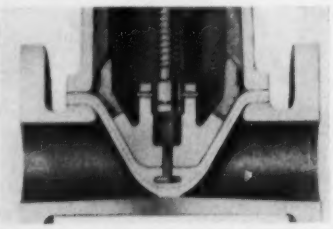
For one-man operation. (268A)

. . . One-man operation of Saunders patent diaphragm valves in 10, 12 and 14-in. sizes is now easy through a new planetary gear torque reducer. Either on new valves or on those already in service, the reducer gives 5 to 1 mechanical advantage.—*Hills McCanna Co., Chicago, Ill.*

Valves, Diaphragm

For straight-through flow. (268B)

. . . Grinnell-Saunders Straightway diaphragm valve offers straight-through flow for handling viscous materials, fibrous slurries, sludges, semi-fluids and solids in suspension. In addition, this valve retains all of the advantages of conventional Grinnell Saunders weir type diaphragm valves. —*Grinnell Co., Saunders Valve Dept., Providence, R. I.*



Valves, Diaphragm

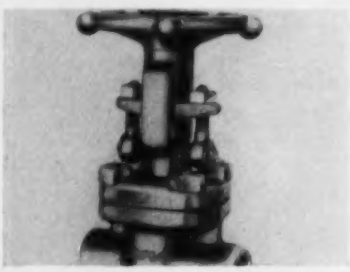
For remote control at almost unlimited pressures. (268C)

. . . New diaphragm-actuated valve offers remote fluid-flow regulation at standard pressures ranging from 125 through 2,500 psi. And higher pressures can be handled if necessary. Operated by air, the diaphragm-actuated valve gives direct or reverse action with either single or double stainless-steel seats.—*Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.*

Valves, Forged

Lighter, stronger, wear resistant. (268D)

. . . A completely redesigned line of forged steel gate valves for petrochemical, process and power applications is available with either screwed or welded ends in sizes ranging from ¼ to 2 in. Some of the major improvements include stainless-steel eyebolts and nuts, a redesigned stuffing box with sturdier gland and stainless-steel follower, and a smoother-operating stem.—*American Chain & Cable Co., Bridgeport, Conn.*



Valve, Gate

Smooth operation, low maintenance. (268E)

. . . All-new gate valve is claimed to overcome disadvantages in conventional gate valves. Already proven in the field by refineries and chemical plants, the new valve shuts off the line impenetrably, both on the upstream and downstream side of the wedge.—*Hamer Valves, Inc., Long Beach, Calif.*

Valve, Globe

Unique design eliminates leaks. (268F)

. . . Through a combination of design features the Gyroseal glove valve assures a complete metal-to-metal seal between disk and seat. These features include spinning disk, duel purpose seat and line contact between seat and disk.—*Gyroseal Valve Div., Richmond Foundry & Mfg. Co., Richmond, Va.*

Valve, Globe

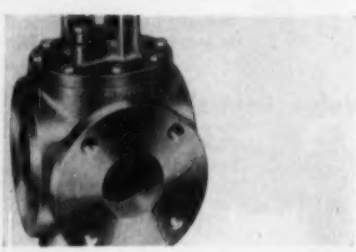
Aimed at high pressure needs (268G)

. . . A new line of bronze globe valves, rated at 200 psi. steam pressure and at 400 psi. water, oil and gas pressure, claims to fill the bill for a higher-pressure, throttling valve. Body and bonnet of the valve are made of S-1 Bronze—called the highest-grade valve bronze ever formulated. An extremely close-grained material, it features high density, strength, top wear, corrosion resistance.—*Lunkenheimer Co., Cincinnati, Ohio.*

Valve, Plug

Plug handles many materials. (268H)

. . . Departing from conventional plug valve construction, the seating force on this plug is applied manually. Turning torque is kept low by dual handle design. Lower handle raises plug from its seat, upper handle adjusts for the desired flow. In this way, friction and wear between the seat and plug is eliminated. Plug can be relowered to give positive seal.—*Republic Mfg. Co., Cleveland, Ohio.*



Valve, Sampling

Self-draining. (268I)

. . . Sampling valve has seat that is outside body for installation where it's necessary that seat be inside wall of vessel. This prevents liquid from remaining in the nipple and valve, makes valve completely self-draining. —*Jerguson Gage & Valve Co., 80 Fellsway, Somerville 45, Mass.*

POWELL NI-RESIST VALVES

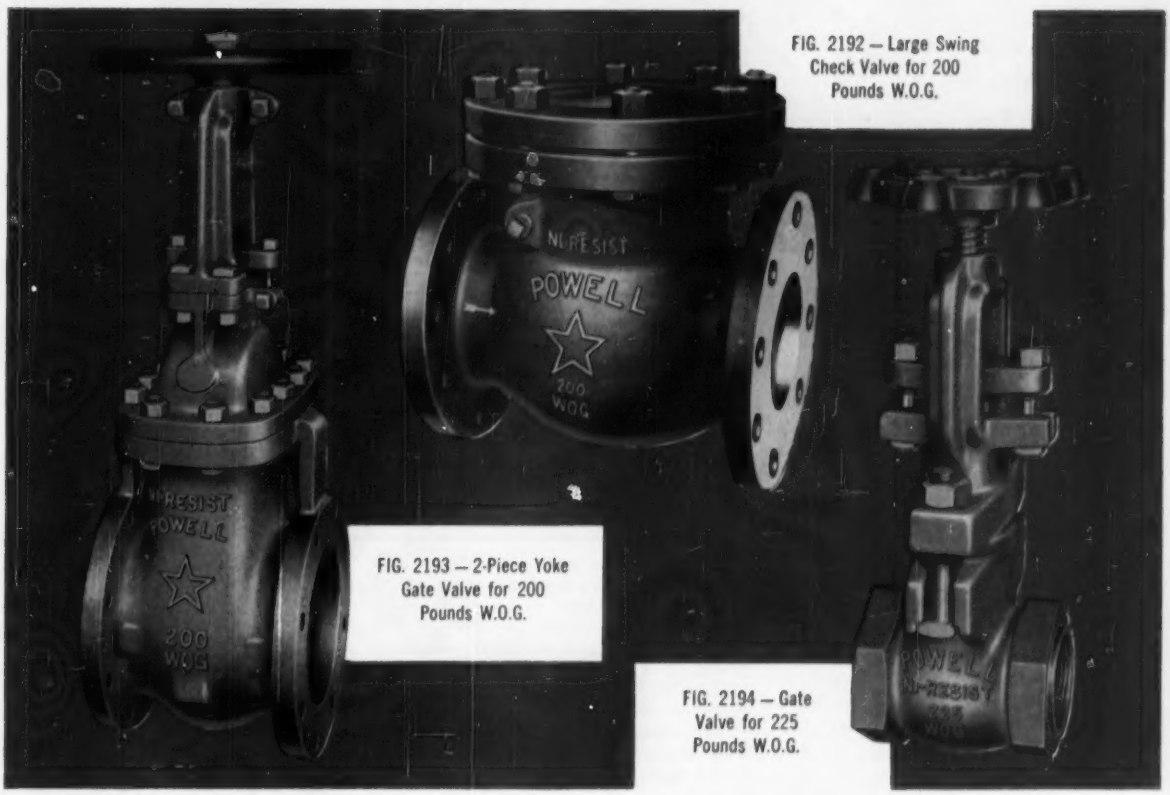


FIG. 2192 — Large Swing Check Valve for 200 Pounds W.O.G.

FIG. 2193 — 2-Piece Yoke Gate Valve for 200 Pounds W.O.G.

FIG. 2194 — Gate Valve for 225 Pounds W.O.G.

Resist corrosion, erosion, heat and wear

Powell Ni-Resist* Valves have far greater corrosion, erosion, heat and wear resistance than ordinary cast iron. Although comparable in strength and physical characteristics to gray iron, and resembling austenitic stainless steel, no other cast metal offers such a unique combination of useful properties.

While similar metals are now available, The Wm. Powell Company has selected Ni-Resist, the alloy cast iron developed by The International Nickel Company. Performance records, taken over a period of many years, conclusively prove that Ni-Resist has been used for valves, pumps and other equipment handling corrosive and erosive liquids with outstanding results.

Powell Ni-Resist Valves are especially adapted for handling soda and sulphate pulp and paper mill liquors, alkalies and sludges, and wherever high nickel-iron alloy valves are needed.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our Ni-Resist Valves as well as our *complete line* of *Powell Quality Valves* — all with *Performance Verified*.

Trademark of The International Nickel Co.

PERFORMANCE PV VERIFIED

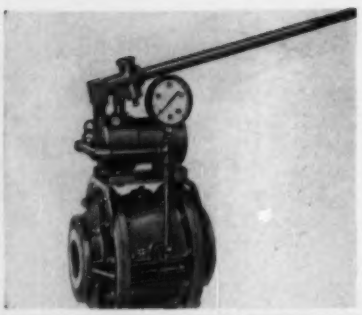
BRONZE, IRON, STEEL AND CORROSION-RESISTANT VALVES

The Wm. Powell Company, Cincinnati 22, Ohio . . . 110th YEAR

Valve, Slurry

Controls abrasives, corrosives. (270A)

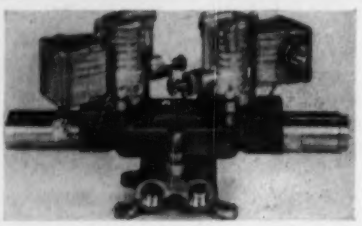
. . . Latest adaptation of the pinch-cock principle is the Krebs rubber slurry valve. With a design aimed at overcoming previous basic deficiencies of pinch valves this valve claims improved control over flow of abrasive and corrosive slurries. Valve is built with a pure gum rubber liner encased within a high-grade casting. Flexible rubber orifice is adjusted hydraulically by a simple remote finger-tip control. Available in 1½, 2, 3, and 4-in. sizes.—*Equipment Engineers, Inc., San Francisco, Calif.*



Valve, Solenoid

New attachment insures positive centering of valve stem. (270B)

. . . Driven by air, a new attachment on double-solenoid valves insures positive mechanical centering of the main valve stem in the neutral position. The self-contained unit consists of stop plungers in extensions mounted at the ends of the valve body.—Absence of springs allows attachment to be mounted in any position.
Akron, Ohio.



Valve, Spray

Ups efficiency of deaerating heaters. (270C)

. . . A completely new type of spray valve provides a constant flow angle under all conditions. A specially constructed parabolic plug produces an unvarying, even spray pattern at pressures and flow rates ranging from 3 to 150% of rating.—*Graver Water Conditioning Co., New York, N. Y.*

Valve, Spray

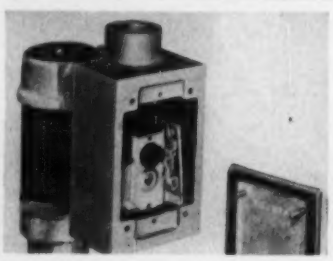
Protected against scaling. (270D)

. . . A new non-scaling spray valve has valve stem and guide sealed against liquid to prevent scaling. It is suitable for feed-water heaters, deaerators, hot process water softeners, cooling towers, aerators, degasifiers and spray ponds.—*Griggs Machine Co., Wallington, N. J.*

Valve, Timer

Controls flow on timed cycle. (270E)

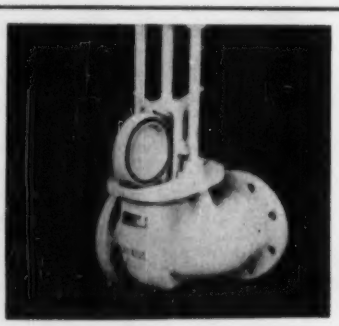
. . . Timer valve now available automatically controls flow of liquids, gas or air. It turns flow on or off at desired intervals. Unit consists of a solenoid valve and a timer control sealed in a water-tight case. It will fit all standard pipe ⅛ in. and larger, operated on 110- or 220-v. current. Timer valve can be furnished in a wide variety of timing cycles.—*Automatic Controls Corp., Ann Arbor, Mich.*



Valve, Visible-Wedge

For impenetrable sealing. (270F)

. . . Three new visible-wedge valve styles have been added to a previous straightway model to provide all of the configurations necessary for modern piping and manifold needs. All four of the models incorporate impenetrable sealing action with simplicity of operation found in a gate valve. Also, all of them have the same center-to-face dimension as standard tee and elbow pipe fittings. Precision metal-to-metal fit on wedge and seats provides line shut-off.—*Hamer Valves, Inc., Long Beach, Calif.*



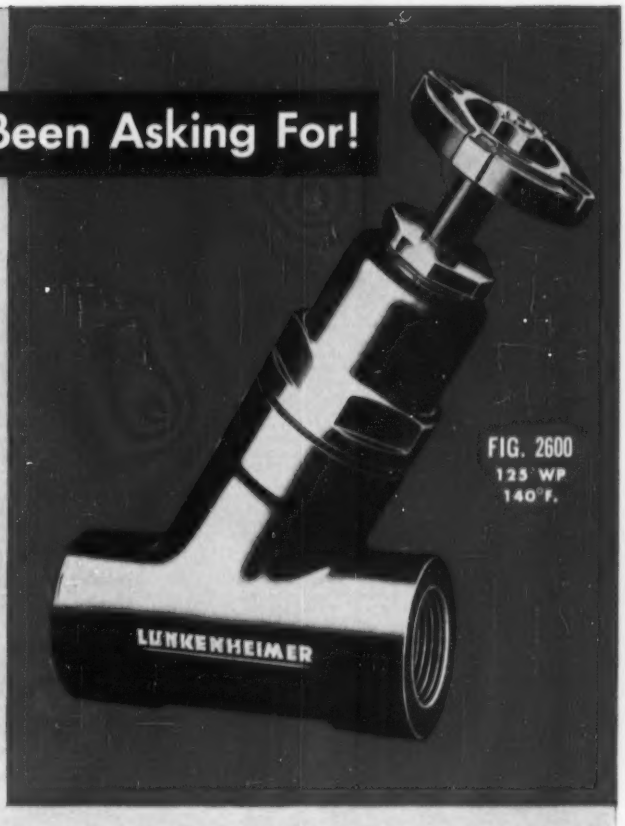
Vent, Tank

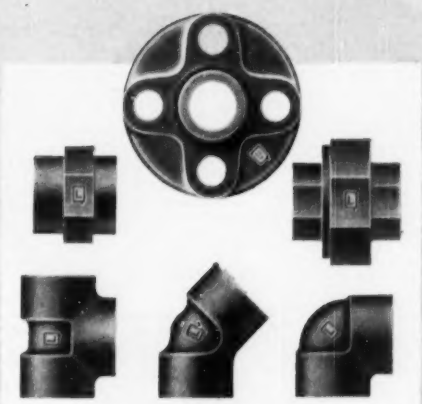
Blocks moisture entry. (270G)

. . . A new powdered bronze tank vent eliminates hazards of fire and explosion by allowing vapors to escape upward away from the venting area. Also, it acts as a flame arrestor, is impervious to water. The porous bronze material resists corrosion.—*OPW Corp., Cincinnati, Ohio.*

The New Sizes You've Been Asking For!

LUNCOR PVC VALVES NOW in a COMPLETE LINE FROM ½ to 2 INCHES!





The first all-molded PVC Valve for corrosive fluids is now available in a complete range of sizes, including ½", ¾", 1", 1½", and 2" . . . each with a full line of fittings.

Since its introduction, the Luncor PVC Valve has proved so popular for corrosive service that demand for new sizes has continued to mount. Now you can take advantage of its proved-in-service superiority for many more applications!

The Luncor PVC Valve handles nearly all common corrosive solutions. It replaces expensive high-alloy or glass-lined valves . . . resists chemical action, aging, outdoor weathering, and is a non-conductor of electricity. It weighs half as much as aluminum—one-sixth as much as bronze—has a strength-weight ratio among the highest of all construction materials. Its great strength provides rigidity comparable to metal . . . so the Luncor PVC Valve is built to *close* tight and *stay* tight. Every part of the valve is molded from corrosion-resistant polyvinyl chloride . . . body, bonnet, disc, stem, and handwheel. Packing is self-lubricating Teflon.

BRONZE • IRON • STEEL • PVC

REQUEST CIRCULAR 601 from your Lunkenheimer Distributor or The Lunkenheimer Co., Box 360, Cincinnati 14, Ohio

L-256.29

LUNKENHEIMER QUALITY

LUNKENHEIMER®

TECHNICAL LITERATURE

Bolts, Alloy Steel.....Ell bolts can be reassembled without distortion or leak development. Tightening is easy & positive . . . absolutely leak proof. For details on the "Key" to leak control, request Bulletin HE-6.
272A Henry Vogt Machine Co.

Cocks, Sleeve-Packed.....The Klinger Cock is kept tight by means of a resilient renewable packing sleeve, which is firmly compressed around the plug. For full details on Klinger Cocks, request descriptive literature.
272B Klinger Corp. of America.

Couplers.....Kamlok quick couplers—the fastest, surest coupling known. They couple & uncouple instantly regardless of hook-up. Useful in industrial hose lines, fuel delivery & marine service. Bulletin F-10 on request.
272C Jordan Corp.

Couplings.....Offers new quick-connect, quick-disconnect coupling, which can be used for high pressure as well as gravity flow & vacuum. Provides instant line shut-off when equipped with valves. Bulletin 250.
272D Snap-Tite, Inc.

Couplings.....Announces the availability of a booklet, "Amerigear Couplings . . . In action," which contains a number of case histories of power transmission problems which were solved by unique coupling.
272E American Flexible Coupling.

Couplings.....Kamlok's positive seal all along the line assures greater safety in handling all types of liquids. Valuable reference highlights in detail Kamlock's quick, tight seal. For details, request Bulletin No. F-10.
272F OPW Corp.

Couplings.....Releases a revised catalog on Quick-Seal line of quick connect-disconnect hose couplings. Features cutaway views of coupling which reveal its unique design & construction. "Quick-Seal Couplings."
272G Titeflex, Inc.

Couplings.....Steelflex couplings offer unique multiple protection for connected machinery—overcome damaging conditions of shock loads, shaft misalignment and vibration. Engineering Bulletin covers details.
272H Falk Corp.

Couplings, Chain..... Literature available on chain couplings, taper-lock sprockets and Dodge roller chains. Technical data and selection methods. For information, request your copy of Bulletin No. A644.
272I Dodge Mfg. Corp.

Couplings, Clamp Type & Reusable..... Makes available reference covering a wide range of reusable & clamp type couplings & hose assemblies for high, medium & low pressure applications. Catalog No. 300.
272J Anchor Coupling Co.

Couplings, Elbow.....Makes available literature describing a non-ferrous elbow coupling for faster, more efficient unloading of tank cars containing petroleum products or liquid chemicals. Bulletin No. 70.
272K Atlantic Metal Hose Co.

Couplings, Flexible.....Up to 15 years maintenance-free service is not unusual with Lovejoy lubrication-free flexible couplings. They are of simple yet rugged construction with double-life cushions. See Catalog.
272L Lovejoy Flexible Coupling Co.

Couplings, Quick-Seal.....In an unlimited range of sizes to handle any material that will flow thru a line—for any application that demands leak-proof connections & long service life. Data in illustrated, 16 p.
272M Titeflex, Inc.

Elbows, Long Tangent.....Feature many advantages: save pipe; often eliminate short nipples and their extra welds; save time and money in lining up and clamping pipe and fitting; etc. Request Catalog No. 54.
272N Midwest Piping Co.

Lubrication Systems..... The Farval valve has only two moving parts—is simple, sure & foolproof, without springs, ball-checks or pinhole ports. There is a "tell-tale" indicator at each bearing. Request Bulletin 26.
272O Farval Corp.

Fittings.....Fully illustrated booklet describes Flodar Combination (self-flaring) fittings for hydraulic pressures. Standard sizes ¼" to 2" O. D. tubing. Details features & performance. Catalog BA 555.
272P Flodar Corp.

Fittings.....PVC conventional fittings, new shrink fittings and roll-thread fittings in full variety of sizes. Boltaron 6200 unplasticized PVC (type I) & 7200 high-impact PVC (type II). Request Bulletin.
289a *H. N. Hartwell & Son.

Fittings.....Offers Klinger Master Catalog describing the complete range of products . . . compressed asbestos sheet packings for all purposes, valves, cocks, level gages, synthetic and silicone rubbers, etc.
272Q Klinger Corp. of America.

Fittings.....Describes the company's line of one-piece, abrasion-resistant, wear-back fittings. Designed primarily for hydraulic materials handling systems. Send for your copy of Data Sheet Wc.
272R Allen-Sherman-Hoff Co.

Fittings, Air Hose.....Le-Hi Air Hose Fittings for mining, tunneling, contracting, quarrying, construction & in industry wherever compressed air is utilized. Details are made available in Bulletin 110.
272S Hose Accessories Co.

Fittings & Flanges, Polyvinyl Chloride.....Illustrated, 12 p. describes line of polyvinyl chloride pipe fittings & flanges. Includes: characteristics & advantages; corrosion-resistance; applications; fabrication; etc.
272T Grinnell Co.

Fittings, Forged Steel.....Wherever strong, tough pipe joints are needed . . . Watson Stillman forged steel fittings provide a safety factor against costly piping failures. Note details in Bulletin No. A3-50.
292a Watson-Stillman Fittings.

Fittings, Hose.....Catalogs give detailed information on hose for low pressure service & brass re-usable fittings. Describes the 3 body types of hose which are available. Request Catalog Files 4480A & 4484A.
272U Parker Appliance Co.

Fittings, Metal Pipe.....2 p. bulletin describes impact fittings for pneumatic materials handling systems. Fittings have separate, reversible wear-back which provides high abrasion resistance. Data Sheet Wb.
272V Allen-Sherman-Hoff Co.

Fittings, Nylon.....This new development is a lightweight nylon fitting which is impervious to most acids & alkalies & is guaranteed not to crack or leak under normal conditions. "Jaco—the Zytel Miracle Fitting."
272W . Jaco Mfg. Co.

Fittings, Nylon Plastic.....These two-piece fittings can be used with either metal or plastic tubing. Offer numerous advantages: lighter weight, lower cost & greater resistance to attack by acids. Bulletin Series 1100.
272X Thomas Associates.

Fittings, Pipe.....Presents newest catalog of stainless steel pipe fittings which shows all standard pipe fittings and flanges, flanged fittings, butt weld fittings, etc. Request fully illustrated Catalog No. 653.
279a Camco Products.

Fittings, Polyvinyl Chloride.....Company announces the development of new, smaller sizes of polyvinyl chloride fittings and adaptors for connecting polyethylene and other flexible tubing. Catalog No. 102.
272Y S. & C. Mfg. Co.

Fittings, Seamless Welding.....B&W fittings are manufactured from seamless steel tubing & are available in alloy, carbon & stainless grades in a wide range of sizes. Grades & size ranges in Bulletin FB-500.
272Z Babcock & Wilcox Co.

Fittings, Stainless & Alloy Steel..... Engineering data & size dimensional information included in new 8 p. bulletin. Used for high temperature & corrosive applications in process industries. Bulletin S-1-55.
292b Watson-Stillman Fittings.

Fittings, Stainless Steel.....Company announces the availability upon request of a complete stainless steel fittings catalog giving engineering drawings, dimensions and basic material data. Catalog No. 55F.
287d Cooper Alloy Corp.

Fittings, Stainless Steel.....Quikupl Stainless Steel Fittings . . . makes available Manual which covers the design, applications & limitations of revolutionary new type stainless fittings. Bulletin Q100.
272AA Cooper Alloy Corp.

Fittings, Stainless Steel.....Speedline fittings simplify pipeline design. Details of the greater design flexibility possible with Speedline fittings . . . at lower cost . . . available in new fully illustrated catalog.
272BB Horace T. Potts Co.

Fittings, Stainless Steel.....New stainless steel fittings will assure you of long, trouble-free service in tough piping applications . . . will reduce down-time and cut maintenance costs. Bulletin No. S-3-55.
292d Watson-Stillman Fittings.

Fittings, Stainless Steel.....Offer entirely new concept of fitting design & fabrication—much greater speed & ease of installation—savings in original investment costs—etc. Details in Bulletin No. 1055.
272CC Tri-Clover Div.

Fittings, Welding.....Weldolet welding fittings serve the nation's industries. There are branch connections for any and all piping services. Company offers a catalog describing their line. Catalog No. W-4.
272DD Bonney Forge & Tool.

Fittings, Wrought Iron.....Fibres of inert iron silicate distributed throughout high-purity iron make this piping material desirable for applications where corrosion is a factor. Request Bulletin No. TT-787.
272EE Tube Turns.

Flange Specifications.....Company announces the development of a new Flange Specification table for ASA and MSS Flanges in a convenient, slide rule form. Pocket-size reference is available upon request.
279b Camco Products.

Forgings, Hollow.....Process equipment that meets today's requirements—Babcock & Wilcox hollow forgings. Makes available detailed information about B&W equipment you need to meet today's competition.
225e *Babcock & Wilcox Co.

Hose Assemblies.....Presents a wide range of factory assembled high, medium and low pressure hose assemblies for hydraulic, suction return and general applications. Request illustrated Catalog No. 100.
272FF Anchor Coupling Co.

Better look into it!

THE NEW DURCO

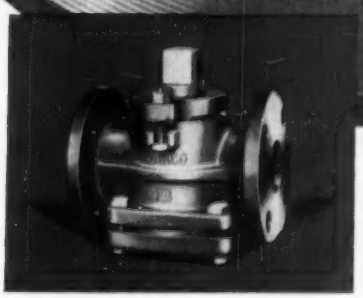
3"

TYPE F VALVE

is now available!

(PREVIOUSLY AVAILABLE ¼" THRU 2" ONLY)

→ *Bulletin V/4a*



DURCO Type F valves are manufactured under one or more of the following patents. U. S. Patent Nos. 2713987, 2729420, 2735645, 2728550. Patented in Canada, 1955, No. 519424.

DURCO
CORROSION RESISTING ALLOYS & EQUIPMENT

THE DURIRON COMPANY, INC., DAYTON, OHIO

Branch Offices: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cleveland, Dayton, Detroit, Houston, Knoxville, Los Angeles, New York, Philadelphia and Pittsburgh.

Pipe, Fittings & Valves

TECHNICAL LITERATURE

Hose & Belting—
Pipe, Fittings & Valves,
Impervious Graphite

Hose & Belting.....Presents a profusely illustrated, 76 p. Catalog on hose, belting, packing, molded & lathe-cut goods & mats. Includes information on sizes, weights, applications, construction features, etc.
274A Hamilton Rubber Mfg. Corp.

Hose, Flexible.....Describes design, installation & purchase of flexible hose used in dust & fume control, air conditioning & materials handling. Includes accessories & application. Bulletins 40, 41, 42, 43 & 44.
274B Flexaust Co.

Hose, Metal, Flexible.....Engineered and manufactured to absorb the costly beating your piping system is now taking efficiently and economically. Available from stock in Bronze, Carbon Steel & Monel. Bulletin IND 4.
277 Packless Metal Hose.

Hose, Metal, Flexible.....Illustrated, 12 p. covers full range of company's manufacture in Rex-Weld corrugated metal hose, Rex-Tube convoluted hose, Rex-Flex stainless steel flexible metal hose, etc. Catalog 147.
274C Flexonics Corp.

Hose, Metal, Flexible.....Describes & gives specifications for flexible metal hose & Flexon corrugated expansion joints. Contains data on application & construction, anchoring & guiding. Catalog No. 149.
274D Flexonics Corp.

Hose, Metal, Flexible.....Company offers catalog on its line of hose and tubing. Contains basic information on all types of metal hose and tubing, fittings, etc. Request Quick Reference Catalog CC-400.
285 *American Brass Co.

Hose, Metal, Flexible.....Ideal for difficult fluid and gas handling jobs. Durable and leak-proof for conveying, controlling movement and vibration, correcting misalignments, etc. Full details in Bulletin No. 20D.
274E Atlantic Metal Hose Co.

Hose, Plastic.....Illustrated Bulletin describes company line of plastic hose & hose assemblies, sheets & molded products. Lists physical & chemical properties of material, including permeability to gases.
274F Resistoflex Corp.

Joints, Ball.....4 applications for Barco Flexible Ball Joints are: To permit movement; to accommodate expansion & contraction; to provide for alignment; to insulate against vibration & shock. Refer to Catalog 215B.
274G Barco Mfg. Co.

Joints, Ball, Swing & Strut.....New interesting reference shows petrochemical and petroleum industry applications for Barco ball, swing and strut joints. Illustrated Bulletin No. 28, available on request.
274H Barco Mfg. Co.

Joints & Bellows.....Sola-Flex bellows & expansion joints are made in all sizes & varieties. They are durable, economical, & are based on advanced engineering designs. Be sure to request the latest catalog.
274I Solar Aircraft Co.

Joints & Couplings.....Teflon expansion joints and flexible couplings absorb shock, vibration, thermal expansion and contraction. Connect unlike piping ends and nozzles. Covers complete data in Bulletin EJ-1155.
274J U. S. Gasket Co.

Joints, Expansion.....Describes & illustrates ExpandZorber—a complete line of flexible pipe connections used to solve vibration & expansion control problems in industrial & process piping. Request Catalog EZ-55.
274K T. R. Finn & Co.

Joints, Expansion.....New reference on HydroLastic expansion joints gives details of construction & specifications along with directions for ordering & application data for various piping systems. 24 p. Catalog 53.
274L Cook Elec. Co.

Joints, Expansion.....New, illustrated 24 p. Expansion Joint Design Guide contains engineering application & selection data that is necessary to the proper solution of pipeline expansion problems. Catalog No. 153.
274M Flexonics Corp.

Joints, Rotary Pressure.....Used to admit steam or fluids under pressure into paper machines, textile machines & similar machines with rotating rolls & drums. Operation & features in Bulletins Nos. J-2001, S-2001.
274N Johnson Corp.

Joints, Swing.....Especially designed to provide for the necessary movement & flexibility in metal pipe loading or unloading lines which handle petrochemicals, oil, alcohol & other fluids. Request Catalog No. 400.
274O Barco Mfg. Co.

Joints, Swing.....Covers information & detailed specifications on 55 styles of bronze & steel, plain & flanged swing joints. Recommendations & data on use, care & maintenance of equipment. 12 p. Catalog No. F-8.
274P OPW Corp.

Joints, Swing.....Swing joints can be furnished with gaskets for any liquid-handling service in the chemical & processing industries. Details on the 400 series steel swing joints, in new Catalog.
274Q Wheaton Brass Wks.

Joints, Swivel.....Loading & unloading line made up with dependable ball-bearing swivel joints provide a wide margin of safety by using the same materials used throughout the pipe lines. Complete Catalog.
274R Chiksan Co.

Nozzles, Spray.....Reach a new peak in spraying efficiency . . . with Yarway non-clog nozzles. Reference includes capacities, dimensions, application information, etc. Request Spray Nozzle Book No. N-617.
274S Yarnall-Waring Co.

Nozzles, Spray.....20 p. booklet, "Yarway Spray Nozzles" offers full description of product line, application data, capacity charts, dimension tables, etc. "Recooling Water in Spray Ponds" also available.
274T Yarnall-Waring Co.

Nozzles, Spray..... Company makes available on request a completely detailed Catalog which provides valuable data on Spraco Nozzle line. Includes information on full cone, flat spray & hollow cone types.
286 Spray Engrg. Co.

Nozzles, Spray.....Company provides a 48 p. industrial catalog with full data on thousands of standard and special nozzles—for every type of spraying. Also information on related equipment. Catalog No. 24.
274U Spraying Systems Co.

Nozzles, Spray.....Describes company's line of nozzles for: oil burners; humidifying; air washing; desuperheating; spray drying; acid chambers; chemical processing; cooling ponds; etc. Request Catalog I.
274V Monarch Mfg. Wks.

Pipe.....Complete line of PVC pipe from ¼" through 6" in schedules 40 and 80. Boltaron 6200 unplasticized PVC (type I) and 7200 high-impact PVC (type II). Details available in Boltaron PVC Bulletin.
289b *H. N. Hartwell & Son.

Pipe, Channel.....Chemi-Drain channel pipe comes in convenient three-foot sections—makes acid-proof channels of any depth from 4" to 12". Plating acids are safely floor-drained with Chemi-Drain. Details on request.
278 *Logan Clay Prods. Co.

Pipe & Fittings.....Contamination protection of pure nickel at 1/6th cost with Lectro-Clad Nickel Plated Seamless Steel Pipe and Fittings. Request fully illustrated catalog covering technical data & applications.
274W Bart Mfg. Corp.

Pipe & Fittings.....19 pg. illustrated bulletin describes sanitary pipe & fittings. Contains sizes & styles, extensive data & diagrams, assembly rules, tubing data, & service & installation tools. Bulletin G-443.
305h *Cherry-Burrell Corp.

Pipe & Fittings.....For corrosion-resistant piping. Impervious graphite pipe & fittings readily installed, long lasting, easily maintained, unaffected by most corrosive fluids. Full details in Catalog Section No. S-7000.
274X National Carbon Co.

Pipe & Fittings, Aluminum.....New Alcoa book tells how, where, why to use Aluminum Pipe & Fittings. Gives: Process piping applications; pipeline applications; portable piping applications. Request your copy.
274Y Aluminum Co. of America.

Pipe & Fittings, Glass.....Glass Pipe & fittings for full-scale production operations. Strengthened by end-tempering & feature corrosion-resistance, non-contamination, etc. Catalogs EA-1 & EA-3 offer full data.
274Z Corning Glass Wks.

Pipe & Fittings, Glass.....New catalog describes pipe and fittings primarily designed for laboratory or pilot plant use and other special services. Sizes from ¼-inch to 1-inch, internal diameter in stock for shipment.
274AA Fischer & Porter.

Pipe & Fittings, Jacketed.....Hetherington & Berner, Inc., engineers-manufacturers, announces the availability upon request of a new literature reference describing their line of jacketed pipe and fittings. Bulletin J-56.
274BB Hetherington & Berner.

Pipe & Fittings, Plastic.....8 p. catalog on Vanton P-Line (PVC), N-Line (Buna N) and S-Line (Styrene) pipe, valves and fittings. Catalog includes technical data required for proper selection.
287h *Cooper Alloy Corp.

Pipe & Fittings, Plastic.....Two types of unplasticized polyvinyl chloride pipe & fittings are described in a new product bulletin. One type is a normal impact grade, and the other a high impact grade.
274CC Carpenter Steel Co.

Pipe & Fittings, Stainless.....New bulletin deals with the use of seamless and welded stainless steel pipe & stainless welding fittings in the process industry. For further information, see Bulletin TB-410.
274DD Babcock & Wilcox Co.

Pipe, Fittings & Valves, Impervious Graphite.....Fully illustrated 12 p. covers line of Impervite impervious graphite pipe, fittings & valves. Also heat exchangers, pumps, coolers, towers, etc. Catalog No. 965.
274EE Falls Industries.

* From advertisement, this issue.

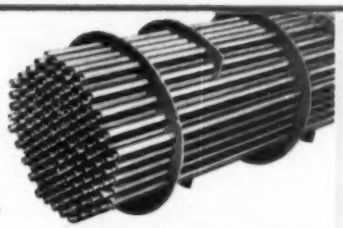
Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 71).

B&W Steel Tubular Products

for economical, trouble-free service in chemical plant equipment and piping systems

- *pressure tubing and pipe — seamless or welded*
- *seamless welding fittings and forged steel flanges*
- *wide selection of analyses — carbon, alloy, stainless steels, titanium metals*



Heat Exchanger and Condenser Tubes



Pipe

B&W TUBING AND PIPE
Seamless and Welded

TYPES—Seamless tubes—hot-finished, cold-finished Welded tubes—from hot-rolled or cold-rolled strip

GRADES—Carbon, alloy and stainless steels, and titanium metals

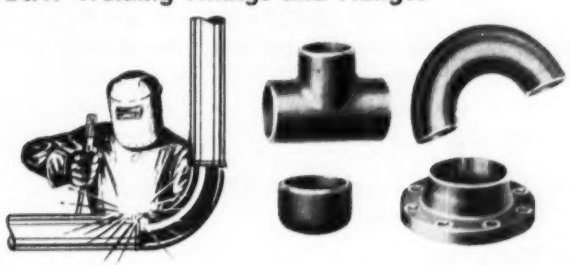
SIZES—Up to 9⅝ inches outside diameter in wide range of wall thicknesses

SURFACE FINISHES—As rolled, as drawn, as welded, flash removed, turned, scale-free and polished

SHAPES—Round, square, rectangular, or special shapes

SPECIFICATIONS—Made to any of the standard specifications such as those of the ASTM and ASME

B&W Welding Fittings and Flanges



TYPES—Elbows, Tees, Caps, Saddles, Laterals, Nipples, Returns, Flanges, Stub Ends, Reducers, Crosses, Bull Plugs

GRADES—Carbon, alloy and stainless steels

SIZES—Complete range of sizes and schedules

FEATURES—Precision-cut bevel ends, uniform wall thickness, true dimensional accuracy, smooth inner surface, full radius, controlled grain structure

SPECIFICATIONS—Made to ASTM specifications for carbon and ferritic alloy steels, and ASA and MSS specifications for stainless grades

B&W TUBING AND PIPE . . .

Offer an economical solution for service problems such as resistance to corrosion, resistance to oxidation, strength at high temperatures and strength at low temperatures. They are available in a complete range of grades and sizes in seamless and welded types.

Ease of fabrication is provided in operations like bending, expanding and beading because B&W Tubing and Pipe are made to specifications which assure uniform quality, size, tolerances, and mechanical properties . . . B&W Tubing and Pipe have been tested and inspected, and certified to be the standard you desire.

Want Help on Tubing and Pipe Selection?

Without realizing it you may be expecting too *much* or too *little* from the grade of tubing you now use or plan to use in some particular application. Possibly you could use a lower grade and save on initial cost without materially affecting performance. Or, you might switch to a higher alloy and get service dividends far beyond the negligible increase in cost.

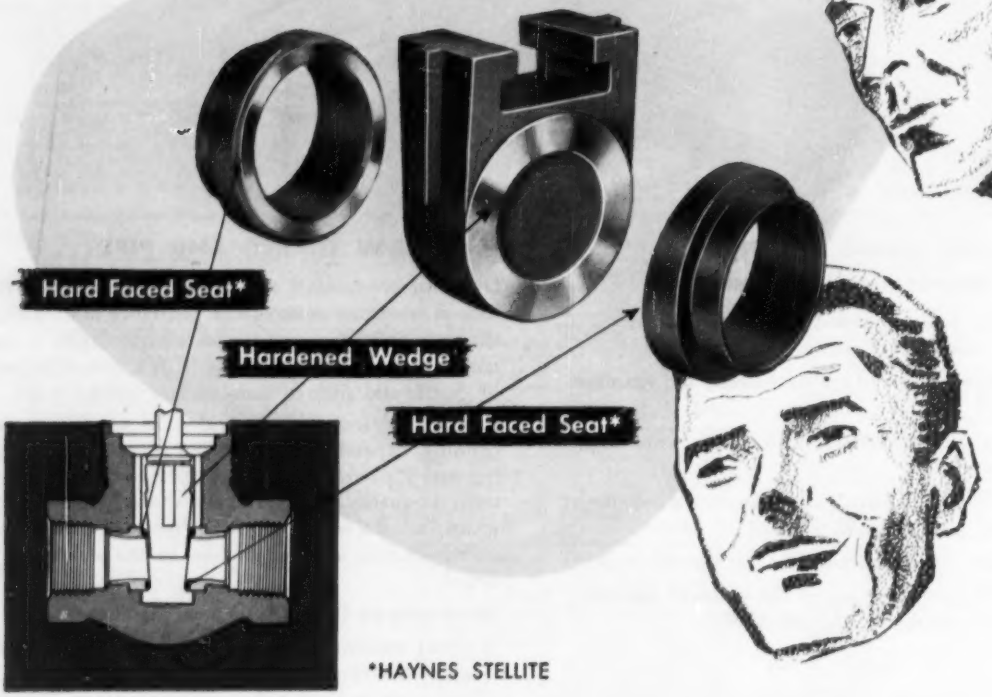
Let Mr. Tubes—your link to B&W—help you make the most suitable selection. You'll find him at your favorite distributor's, or in any of the B&W District Offices across the nation. His long experience, supported by the facilities of B&W's headquarters technical staff, can help you select the tube you need to do your job most economically. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.



TA-6082-A

Tough valve buyers appreciate this kind of...

Toughness



*HAYNES STELLITE

Here's why:—They know that to foil those troublesome valve "termites"—erosion, corrosion, and galling—requires built-in toughness which only seats faced with hard facing alloys AND hardened wedges can provide. Yes, it takes BOTH to do a real job and GP Valves provide both at no extra cost!

Vogt GP Valves feature the toughest and, since they are precision finished, the smoothest seating surfaces obtainable anywhere. That's why they are setting new standards of performance—longer, drop-tight service with minimum, low cost maintenance—in petroleum refineries, chemical plants, power plants and other industries. Available in a complete range of sizes from 1/4" to 2" and rated 800 pounds at 850° F. and 2000 pounds at 100° F.

Advt. No. 5 in a series describing the features of Vogt GP Valves.



Write For Your FREE COPY of Supplement No. 1 to Catalog F-9. Address Dept. 24-FC.

HENRY VOGT MACHINE CO.
P. O. Box 1918—Louisville 1, Ky.

SALES OFFICES: New York, Chicago, Cleveland, Dallas, Philadelphia, St. Louis, Charleston, W. Va., Cincinnati.

Vogt GENERAL GP PURPOSE Vogt FOR BETTER VALVES

DROP FORGED STEEL

VALVES

HAYNES STELLITE—Trade-mark of Union Carbide Corporation

TECHNICAL LITERATURE

Pipe, Fittings & Valves, Tin-Lined—
Pipe, Polyvinyl Chloride

Pipe, Fittings & Valves, Tin-Lined..... Designed especially for distilled water distribution systems . . . combines chemical protection of pure tin with strength & durability of threaded pipe. Bulletin 134.
277A Barnstead Still & Sterilizer.

Pipe, Hard Rubber.....Heat-resistant nitrile hard rubber pipe handles inorganics at 250-275 deg. F.—also resists wide range of organic chemicals at room temperature. Details contained in Bulletin No. 96-A.
277B American Hard Rubber Co.

Pipe Installation, Glass.....Pipe is easy to install & low in installed cost compared with other corrosion-resistant materials. Available in 6 standard sizes from 1- to 6- inch, I.D. inclusive. Installation Manual PE-3.
277C Corning Glass Wks.

Pipe, Laminated Teflon.....Covers physical & chemical properties, advantages & specifications of Fluoroflex-T laminated pipe, manufactured from woven glass impregnated with teflon resin. Bulletin FTL-1.
277D Resistoflex Corp.

Pipe, Plastic.....Ace hard rubber—now more than a century old—long the finest corrosion-resistant pipe available. Widest variety of fittings of any rigid non-metallic pipe. Details in Bulletin No. CE-51.
277E American Hard Rubber Co.

Pipe, Plastic.....Ace Rivivlor is a new rigid threaded plastic pipe with good aging & high impact strength. Not affected by most inorganic acids & alkalis. Excellent for many organics. Request Bulletin CE-56.
277F American Hard Rubber Co.

Pipe, Plastic.....General-purpose moderately priced rubber-plastic pipe handles most common chemicals to 170° F . . . except few strong acids & organic solvents. Tough, odorless, tasteless. Bulletin No. 80.
277G American Hard Rubber Co.

Pipe, Plastic.....Illustrated Folder describes a new thermosetting corrosion service pressure plastic pipe. Durable, light-weight, easy-to-handle & corrosion-resistant—suitable for wide range of applications.
277H Reflin Co.

Pipe, Plastic.....Republic Semi-Rigid Kralastic proves ideal for many applications in food processing & chemical industries. Extremely tough, it will absorb punishment without breaking. Complete information.
277I Republic Steel Corp.

Pipe, Plastic.....Announces the availability of literature covering Kralastic and Tenite plastic pipe. Provides specific technical information on oil field applications of both types of plastic pipe.
277J Southwestern Plastic Pipe.

Pipe, Plastic.....Polyvinyl Chloride is the unparalleled material for plastic pipe. It's a high quality unplasticized-rigid pipe designed to do a better job than any other material. The full story in Bulletin 24.
277K U. S. Steel Corp.

Pipe, Polyvinyl Chloride.....This high quality unplasticized-rigid pipe is available in two types: normal-impact and high-impact. Polyvinyl chloride is the best for plastic pipe. Complete details in Bulletin 24.
277L U. S. Steel Corp.

Pipe, Polyvinyl Chloride.....Describes Ryertex-Omicron PVC rigid type unplasticized pipe. Gives engineering data on pipe & lists over 200 chemicals it will convey without being attacked. Technical Bulletin No. 80-3.
277M Joseph T. Ryerson & Son.



"Piping costs run typically as high as 50 to 70 per cent of the cost of equipment to which the piping is connected, and as high as 15 to 20 PER CENT OF TOTAL PLANT COST!"
(Chemical Engineering, Dec., 1955)

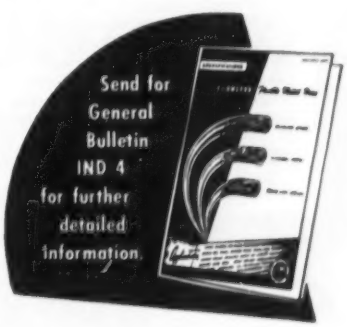
If not adequately compensated for, vibration, expansion, and shock due to sudden changes in temperature and pressure is RIGHT NOW shortening the life of your piping.

Packless® seamless flexible metal hose is designed, engineered and manufactured to absorb this costly beating your piping system is now taking — and do it efficiently and economically.

Let us show you how Packless® flexible metal hose installed in your piping system can save you *hours* in down time and *dollars* in money.

Available from stock in Bronze, Carbon Steel and Monel, with standard or special fittings as required.

Custom engineering service for your specific requirements is available at any time at no extra cost.



PACKLESS
METAL HOSE, INC., 31-51 Winthrop Ave., New Rochelle, N. Y.

Inquiry Code Number for This Advertisement-277

Pipe, Fittings & Valves

TECHNICAL LITERATURE

Pipe, Saran—

Tubing, Stainless Steel

Pipe, Saran.....An old stand-by with many new uses . . . odorless, tasteless, general-purpose rigid pipe & semiflexible tubing. Highly resistant to most chemicals. Find complete details in Bulletin No. 351.
278A American Hard Rubber Co.

Pipe, Saran Lined.....Saran lined pipe, fittings and valves cut corrosion costs . . . can be cut in the field with available pipe fitter's tools. Liquid never touches metal in saran lined pipe. Request details.
278B Saran Lined Pipe Co.

Pipe & Tubing.....Folder gives maximum stress values for ferrous pipe & tubing. Includes the values at various temperatures for complete range of seamless & welded carbon, alloy & stainless tubing steels. TDC-154A.
278C Babcock & Wilcox Co.

Pipe & Tubing, Steel.....Furnishes information on analysis, mechanical & physical properties & creep & rupture data on various tubing alloys used in elevated temperature service. For details, request TDC-163A.
278D Babcock & Wilcox Co.

Piping.....“True Piping Economy” compares wrought iron & other types of pipe in terms of the 3 important costs to consider in buying pipe: initial purchase cost; cost of installation; cost of maintenance.
278E A. M. Byers Co.

Piping.....New 12 p. brochure tells how processing & power piping costs can be reduced substantially—in materials, design & construction. Copies of the booklet, “Piping Flexibility Analysis,” are available on request.
278F M. W. Kellogg Co.

Reducers.....Chemiseal Reducers No. 3-CRS are one piece assemblies, designed to connect unlike pipe sizes with minimum length requirements. Request your copy of Bulletin No. 3-CRS.
278G U. S. Gasket Co.

Rods-Blocks-Sheets-Pipe.....Corrosion-resistant PVC rods, blocks, sheets or pipe that can be fabricated to your specification. Outstanding resistance to corrosive gases and liquids. Request Bulletin.
289d *H. N. Hartwell & Son.

Tubes.....Look at the advantages of Bridgeport balanced-wall duplex tubes. Balanced in wall thickness, for better safety, for longer service, in metal specification to resist corrosion. Duplex Tube Technical Bulletin.
278H Bridgeport Brass Co.

Tubes, Condenser.....Arsenical Admiralty-439 and Ambraloy-927 condenser tubes for normal service, and Cupro Nickel, 10%-755 and Cupro Nickel, 30%-702 for severe stress-corrosion cracking. Pub. B-2.
278I American Brass Co.

Tubes, Condenser.....Trufin S/T condenser tube has approximately twice the heat transfer surface of plain tube—extracts more BTU's per foot of tube. Request new illustrated literature, “Process Flowsheet Catalog.”
278J Wolverine Tube Div.

* From advertisement, this issue.

Tubes, Electronic.....Chatham electronic tubes for commercial, industrial and military applications. Bulletin discusses rectifiers, thyratrons, special purpose tubes, twin power triodes & hydrogen thyratrons.
278K Gera Corp.

Tubes, Heat Exchanger.....Contain the right amount of antimony needed to resist dezincification and other forms of corrosion. For more information, request Chase Condenser and Heat Exchanger Booklet.
278L Chase Brass & Copper Co.

Tubing, Instrument.....New 4 p. bulletin gives full information on advantages, limitations, installation, and available stock sizes and colors for all products in the Dekoron line. For details, see Bulletin 456.
278M Samuel Moore & Co.

Tubes, Heat Exchanger.....Duplex tubes are supplied in more than 100 combinations of ferrous & nonferrous metals. Take advantage of the best-qualities of both metals; best where dual corrosion exists. Bul. 1954.
278N Bridgeport Brass Co.

Tubes & Nozzles, Venturi.....Comprehensive & well-documented reference of interest to engineers dealing with measurement of liquid flow & its various ramifications. Advantages, construction, etc. Bulletin 100.
278O Simplex Valve & Meter Co.

Tubing, Flexible.....Hundreds of applications in the steam and Diesel power fields are filled by Penflex flexible tubing. For complete information on product line, request copy of “Flexineering” booklet.
278P Pa. Flexible Metallic Tubing.

Tubing, Metal, Flexible.....Fully illustrated 52 p. reference offers valuable information on Titeflex helically-wound flexible metal tubing and Uniflex helically-corrugated flexible metal tubing. Catalogue 200.
278Q Titeflex, Inc.

Tubing & Pipe.....Describes super-corrosion resistant tubing and pipe in alloys known as “B” and “C.” Resistance of both grades to common strong corrodents is covered in complete detail. T. D. No. 117.
278R Carpenter Steel Co.

Tubing & Pipe, Stainless.....Literature contains tables of analyses, mechanical properties, creep strength, physical properties, oxidation resistance of 9 of most popular stainless tubing steels. Folder TB-355.
278S Babcock & Wilcox Co.

Tubing & Pipe, Stainless.....Folder offers data on welding characteristics of both austenitic & ferritic types of stainless steels & briefly covers various welding methods & techniques. Technical Data Card No. 162A.
278T Babcock & Wilcox Co.

Tubing & Pipe, Stainless.....For information on corrosion resistance, properties, performance results, uses, and fabrication of Carpenter Stainless No. 20 and No. 20Cb, request your copy of Bulletin 108A.
278U Carpenter Steel Co.

Tubing, Plastic.....Excellent chemical-resistant, all-purpose flexible plastic tubing. Sparkling clear, easy to clean, odorless, non-toxic, can be steam-sterilized. For more information, request Bulletin No. 66.
278V American Hard Rubber Co.

Tubing, Stainless Steel.....Furnishes engineering information on construction and types of flexible stainless steel tubing. Also includes data on fittings. Request this completely illustrated Bulletin No. STC-1.
278W American Brass Co.

Tubing, Stainless Steel.....In selecting tube materials you should bear in mind (1) the difference between initial cost & installed cost (2) the degree of corrosion & oxidation protection afforded. Bulletin TB365.
278X Babcock & Wilcox Co.



YOU PLAN *RIGHT*... when you *PLAN TO USE*

CAMCO

STAINLESS STEEL PIPE FITTINGS





Forged to ASA and MSS Standards

A Complete line of STAINLESS STEEL FLANGES and FITTINGS

- SCREWED
- FLANGED
- WELDING

One source for all your Stainless Steel Fitting Requirements

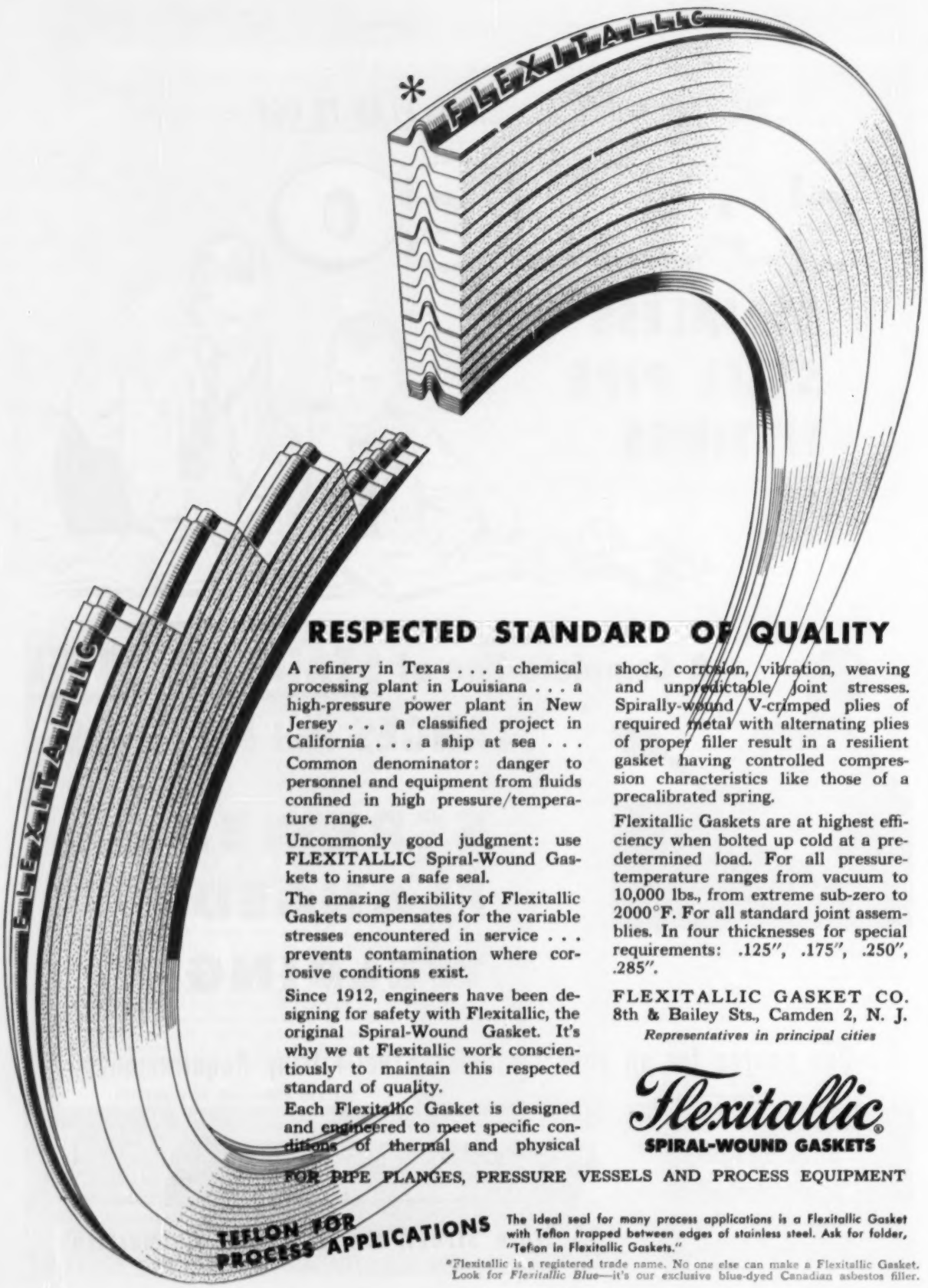
THE Quality LINE IN STAINLESS

CAMCO PRODUCTS, INC.

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FOR PIPE FLANGES, PRESSURE VESSELS AND PROCESS EQUIPMENT

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*Flexitallic is a registered trade name. No one else can make a Flexitallic Gasket. Look for *Flexitallic Blue*—it's our exclusive blue-dyed Canadian asbestos filler.

1956 INVENTORY

TECHNICAL LITERATURE

Tubing, Teflon—

Valves

Tubing, Teflon.....Offers brochure on prices & sizes for Teflon Thin-Walled & Spaghetti Tubing. Brochure gives complete information on properties, characteristics & suggested end uses. Form No. 564 on request.
281A Sparta Mfg. Co.

Unions & Fittings.....Describes a broad line of adapter unions, pipe fittings and boss and bulkhead adapter unions. Reference is very complete with dimensional diagrams, and engineering aids. Catalog No. 200.
281B Anchor Coupling Co.

Unions, Forged Steel.....After quick & easy installations, even in roughest spots, Orifice Unions will perform superbly in measuring, mixing, blending, strainer or blanking off services. Request our Catalog.
281C Clayton Mark & Son.

Unions, Forged Steel.....Describes line of new forged steel unions. Presents complete dimensions of unions in sizes ¼" to 2" in 3000 lb. class. Also covers outstanding design features. Illustrated Bulletin U-1.
292e Watson-Stillman Fittings.

Valve Parts.....Threading Stainless Steel—a 4 p. Folder describes specific high production machining operations on stainless steel valve parts. Speeds, cutting angles, coolants and tooling are discussed.
281D Cooper Alloy Corp.

Valves.....There's an Ace hard rubber, rubber-lined, or plastic-lined valve for every corrosion application. Sizes from 2" to 24". Diaphragm, gate and check types. Lists chemicals handled in Bulletin CE-52.
281E American Hard Rubber Co.

Valves.....Describes "Little Richard" on-off valve: solenoid operated; piston type; pneumatically operated. Rugged new valve adaptable for high pressure service. For details, request Bulletin No. 4062-C.
281F American Instrument Co.

Valves.....Tube Line valves up to 4000 psi eliminate pipe threading . . . seal welding . . . & every joint is a union. Easy & fast assembly in lines win preference for valves in many industries. Bulletin No. 255.
281G Autoclave Engrs.

Valves.....Teflon discs, seats, and packing come with screwed or flanged ends in a variety of styles: globe, Y, angle, swing-check, needle, plug-gate—as well as sampling valves. For details, see Bulletin No. 11.
291 *Alloy Steel Products Co.

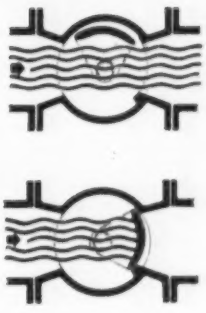
Valves.....New catalog describes company's line of electrically operated two-way solenoid valves for air, gas, steam and liquid flow control. Lists dimensions, specifications & applications. Catalog 200.
281H Atkomatic Valve Co.

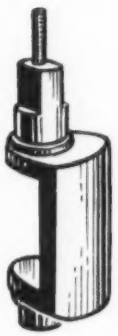
Valves.....Issues new Catalog on special & standard valves for oil, steam, air, gas, water & process chemicals. Sectionalized in 7 bulletins & illustrated with detail drawings, schematic installation hook-ups, etc.
281I Atwood & Morrill Co.

* From advertisement, this issue.

➔ Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

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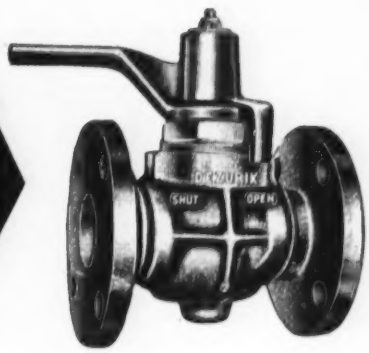




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DeZurik
SHOWER COMPANY
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TECHNICAL LITERATURE

Valves—

Valves, Control

Valves.....The type D pressure reducing & regulating valve has half the number of bolts which saves maintenance time. Gasket seal at diaphragm flange provides easier pressure range conversion. Bulletin 950.
282A A. W. Cash Co.

Valves.....Complete line of corrosion-resistant valves in ¼" through 2" sizes. Boltaron 6200 unplasticized PVC (type I) and 7200 high-impact PVC (type II). Details available in Boltaron PVC Bulletin.
289e *H. N. Hartwell & Son.

Valves.....Shear-Seal valves have longer life & are maintenance free because: as Shear-Seal & rotor slide back & forth on each other with use, they keep lapping themselves & seal even tighter. 12 p. comic strip.
282B Barksdale Valves.

Valves.....Shear-Seal valves catalogued by major service condition: air, oil, water. Three Bulletins include valve characteristics, flow patterns, overall dimensions; etc. Request Nos. A-5, O-5, and W-5.
283C Barksdale Valves.

Valves.....8 p. Folder gives data needed to enable manufacturer, supply company or sales representative to fit the proper valve for the application. Tells buyer how to get what he needs when ordering a valve.
282D Cooper Alloy Corp.

Valves.....Luncor PVC Valves in a complete line from ¼ to 2 inches. Handle nearly all common corrosive solutions . . . replace expensive high-alloy or glass-lined valves . . . resist chemical action. Circular 601.
271 *Lunkenheimer Co.

Valves.....Valves to Combat Corrosion . . . literature present 75 questions and answers selected from Cooper Alloy valve clinics covering materials, operations, service problems, installation and repair.
287e Cooper Alloy Corp.

Valves.....Line of steel valves feature dependable operation and low maintenance cost. Gate, globe and check types handle the most severe high-pressure, high temperature services. Full details in Catalog 20.
282E Chapman Valve Mfg. Co.

Valves.....Available in 18-8 SMo and Craneloy 20 . . . in gate, globe, angle and check patterns . . . ¼" to 6" . . . screwed or flanged ends. Rated 150 p.s.i. at 500° F. For details, see Circular AD-2080.
266 Crane Co.

Valves, Check.....When used with tanks, dry cans, retorts & pressure vessels of all kinds, the Durabla check valve unit is the lowest cost, high-quality valve you can purchase. Details in Bulletin CE-76.
282F Durabla Mfg. Co.

Valves.....Features: non-sticking; no metal-to-metal contact; needs no lubrication; requires no packing; renewable sleeve & plug. Details on type F valve are available. Request Copy of Bulletin V/4a.
273 Duriron Co.

Valves.....Golden-Anderson designs and manufacturers valves that give dependable operation . . . that need little maintenance . . . that last a lifetime. Technical bulletins describing line are available.
282G Golden-Anderson.

Valves.....Hoke, Inc. has just published a new wall chart on Hoke valves with valuable information on valve sizing and corrosion resistance. The company makes this chart available to you upon your request.
282H Hoke, Inc.

*From advertisement, this issue.

Valves.....Circular describes new line of five bronze, solder-end valves. Valves are adaptable to all types of commercial structures & industrial applications & they embody exclusive Lunkenheimer features. Circular 602.
282I Lunkenheimer Co.

Valves.....For heavy duty or special duty, McNally valves give accurate control & long life. Standard line includes: abrasion resistant, gate, motorized gate, cock, special, etc. valves. Detailed Bulletins.
282J McNally Pittsburg Mfg.

Valves.....Valves specifically designed for the tougher, more difficult problems in automatic and manual valve operation. Catalog covers: design & operating features; performance; engineering data.
282K P-K Industries.

Valves.....6 p. bulletin on Safety Clean-out Valve for use on buried tank installations for storage of volatile, inflammable liquids. Describes construction & operation features. Request your copy.
282L Petrometer Corp.

Valves.....Proper design and the correct choice of metals combine in the OIC forged steel line to assure adequate strength, safety, and long trouble-free operation on chlorine service. Request Bulletin No. 1000.
282M Ohio Injector Co.

Valves.....Illustrates & describes SK's line of valves. Includes data on designs & their specific advantages & details of construction & application. Control & testing facilities also covered. Bulletin V-1.
282N Schutte & Koerting Co.

Valves, Air.....The Controlled Closing Air Valve, Type CCAV, a new concept for the protection of pipe lines against the damaging effects of surge & built-up pressures, is fully illustrated in our Bul. 200.
282O Simplex Valve & Meter Co.

Valves, Air Control.....Releases a quick-reference guide to 17 different lines of air-control valves & accessories. Helpful for quick, easy selection of the right Airmatic Valve to fit the specific application.
282P Airmatic Valve.

Valves, Air Release.....Describes Simplex air release valves . . . for water, sewage & industrial use. Includes data on essential requirements, methods of installation, operation, uses, wts., etc. Bulletin 1204.
282Q Simplex Valve & Meter Co.

Valves, Automatic Drain.....Offers illustrative & descriptive catalog-bulletin, "New Greenwood Automatic Drain Valve." Extremely simple to install, net weight 1 lb., 3" in length. Request Bulletin GV-14.
282R Vernon Tool Co.

Valves, Ball.....Jamesbury double-seal ball valves offer valuable advantages: leak proof performance, full flow and quarter turn operation, minimum maintenance, etc. Illustrated booklet gives complete details.
282S Jamesbury Corp.

Valves, Ball.....Made of bronze, the new Rockwood Top Entry Ball Valve is ideal for handling oxygen & hazardous liquids as well as water, oil & gas. Illustrated Brochure covers valve features & specifications.
282T Rockwood Sprinkler Co.

Valves, Bellows Motor.....Valuable data on the new Bellows Motor Valve —No. 992-D Series for final control element in pneumatic or hydraulic control systems to regulate flow of gas, oil, water or other liquids.
282U Fulton Sylphon Div.

Valves, Bronze.....Covers OIC 500 line —modern 200 lb. bronze valves. Includes features, service recommendations, working pressures, etc. for globe & angle valves—horizontal & angle checks. Form No. 1001.
282V Ohio Injector Co.

Valves, Bronze.....Greater operating safety, positive shutoff, & low upkeep costs are prime advantages of modern OIC bronze gate valve designs in all pressure classes. Full details in Folder No. 1006.
282W Ohio Injector Co.

Valves, Butterfly.....Issues reference describing tight-closing rubber-seated butterfly valves (Model BV). Includes data on valve operators, butterfly valve components, sizes, pressures & velocities. Bulletin 650-L1A.
282X B. I. F. Industries.

Valves, Butterfly.....In this new Catalog you get the complete dimensions, layout drawings, specifications and materials for all pressure ratings of R-S Butterfly Valves that are now standardized. Catalog 160.
282Y S. Morgan Smith Co.

Valves, Cast Flanged.....Standard Practice SP-42 . . . 8 p. Folder listing detailed specifications for 150# corrosion-resistant cast flanged valves, flanges and flanged fittings. Copies available upon request.
282Z Cooper Alloy Corp.

Valves, Check.....Fast, quiet operation means low cost operation for check valves . . . and that's exactly what the Chapman Tilting Disc Check Valve is designed to do. Data on full line in Catalog No. 30-A.
282AA Chapman Valve Mfg. Co.

Valves, Check.....Norwalk disc type check valve flanged and fabricated in steel . . . for gas and air . . . low and high pressures. Will operate at full capacity with negligible differential. Buls. 1000M & 1300M.
282BB Norwalk Valve Co.

Valves, Chlorine.....Now regularly available with screwed ends & flanged ends . . . designed exclusively for water-free chlorine gas or liquid up to 300°F. For full information, request Folder No. AD 1976.
282CC Crane Co.

Valves, Control.....Both the diaphragm-actuated Type CV-D & the piston-actuated Type CV-P valves will handle water, steam, air, gas, oil or other similar fluids at unlimited pressures. Bulletin 1027.
282DD Blaw-Knox Co.

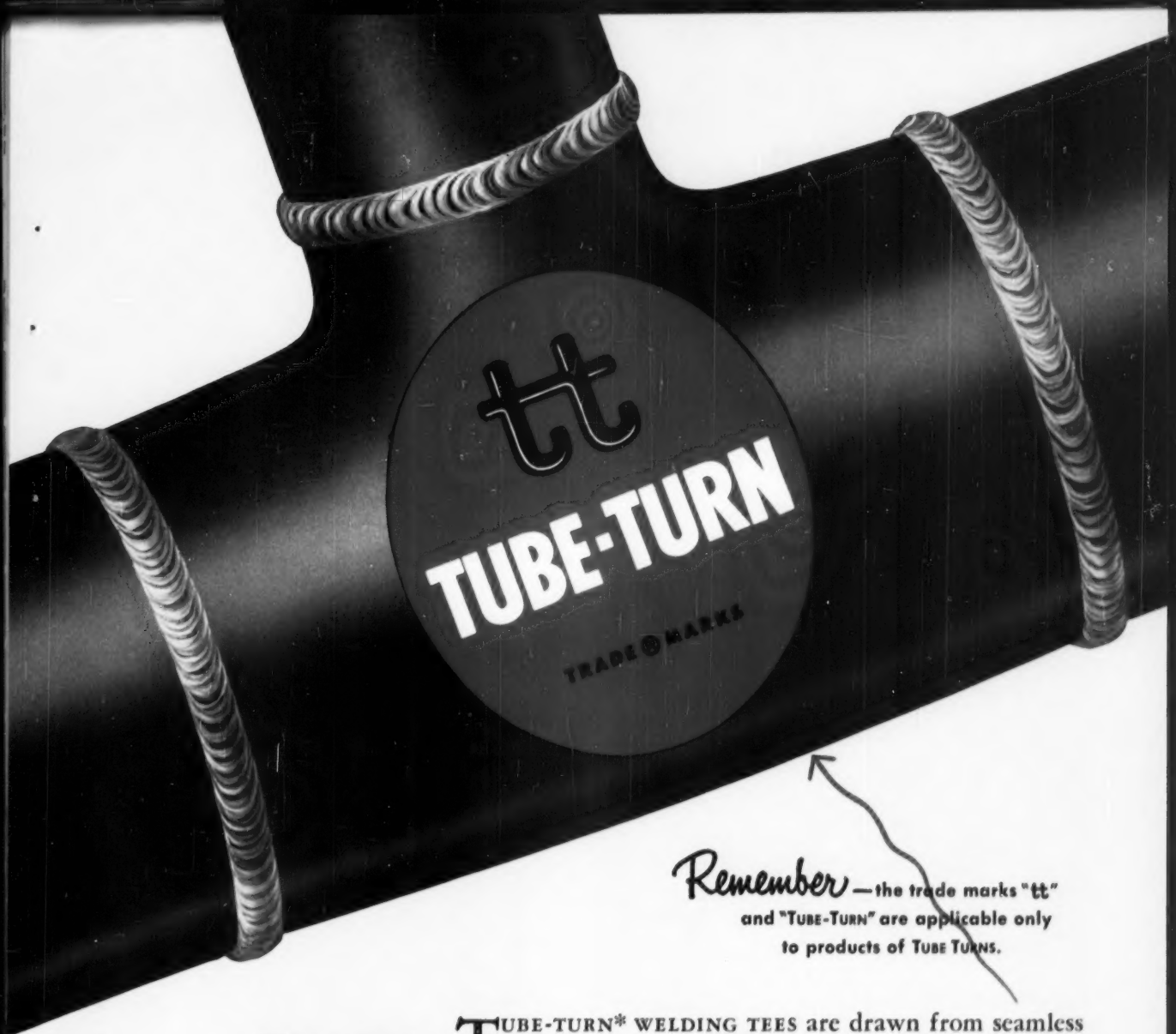
Valves, Control.....Illustrated folder describes a considerable number of Schade automatic regulating valves for level & pressure control of steam —air—gas—oil—water. Request your copy of Folio No. 4.
282EE Schade Valve Mfg. Co.

Valves, Control.....For fluid control—the new Foster control valve with Isoforce actuator . . . gives you more power when you need it. Available in sizes starting at ½". Full details in Bulletin CV-1.
282FF Foster Engrg. Co.

Valves, Control.....Announces new standard line of control valves—8-3000 Series. Valves represent first basic departure in control valve design & overcome all present day limitations. Details in Bulletin No. 101-C.
282GG Hammel-Dahl Co.

Can't remember?

Can't quite recall who built that new plant, who developed that new process? Well, then, take a crack at finding the answer in this issue's Inventory of New Plants & Facilities (p. 7) or Inventory of New Processes & Technology (p. 45). They're designed to help you.



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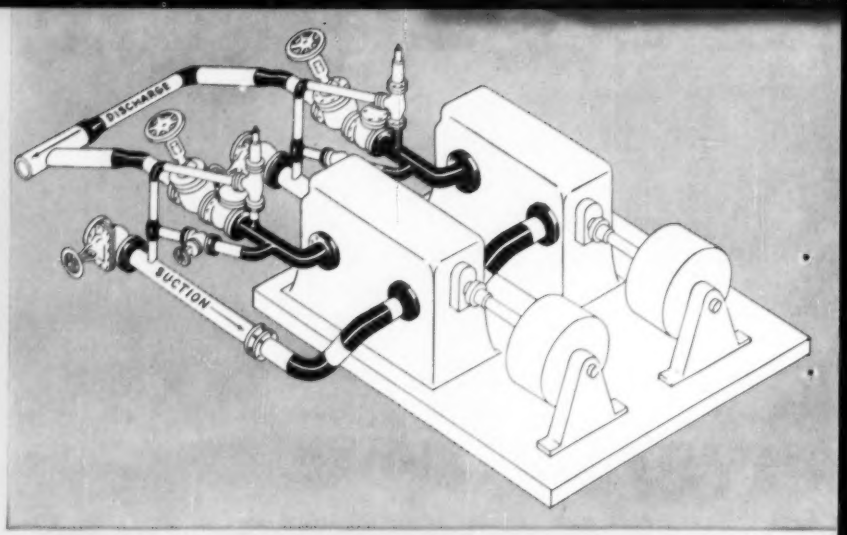
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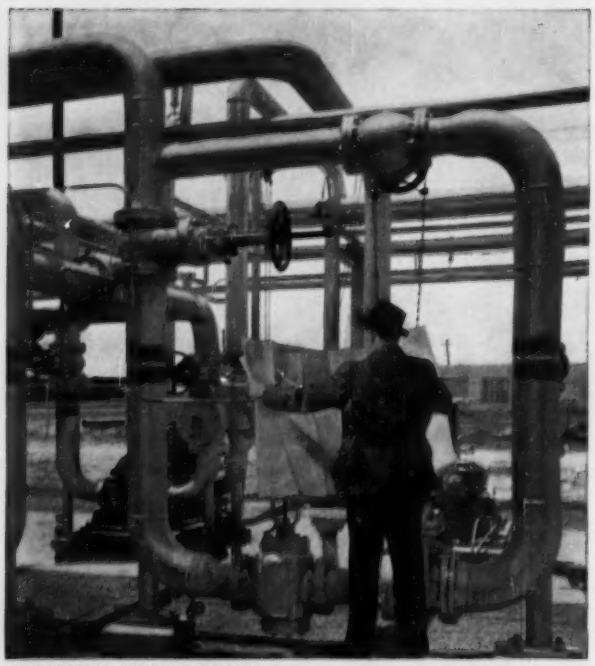


EXTRA VALUES

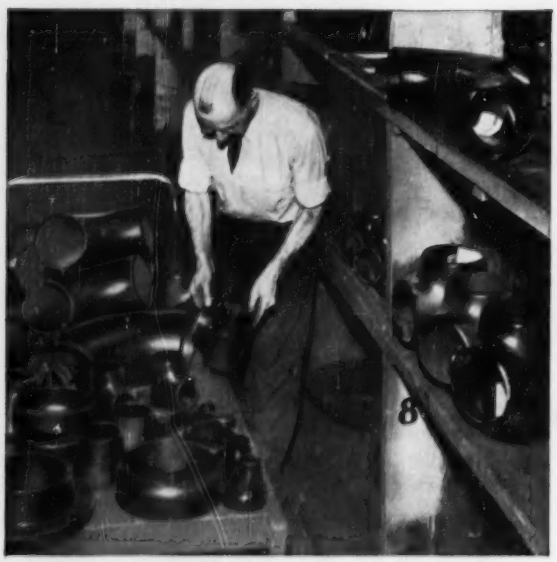
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3 simple steps can help you select metal hose for best results and longer service life

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1 Send exact specifications

Complete and exact statement of operating conditions will go far in saving you money on flexible metal hose.

First, it assures you that the connector you get will live up to your expectations. And, second, that manufacturers won't bid on hose that's "over-engineered." You'll save in the long run because you'll get the right assembly for every job.

Here is the information we need before we can give you our best suggestions:

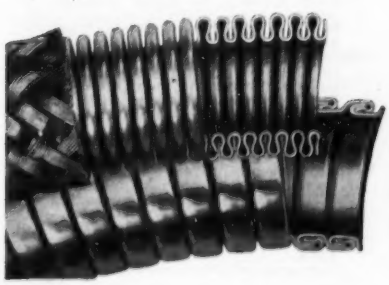
A PHYSICAL REQUIREMENTS:

1) *Over-all length (including fittings)*
2) *Diameter (I.D. and O.D.)*
3) *Fittings—size, type, style of thread*
4) *Tolerances permitted*
5) *Quantity required*

B OPERATING REQUIREMENTS:

1) *Material to be conveyed*
2) *Operating pressures—is there shock?*
3) *Operating temperatures*
4) *Movement—lateral and longitudinal*
5) *Vibration conditions?*
6) *Expansion and contraction requirements?*
7) *Corrosive atmosphere?*

Send sketch of proposed installation if available.



CORRUGATED and STRIP-WOUND. In a wide range of sizes and styles in any workable metal: Bronze, Brass, Aluminum, Stainless Steel. Various fittings.

2 Use standard metal hose where possible

Many standard connectors have been developed to meet problems common to many finished products—i.e., vibration. Often a standard metal hose will answer your needs as well as a special item could. We can often save you money if we know operating requirements.

3 Call the Man from Anaconda to help you select, specify, test

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Please send me your free Quick Reference Catalog CC-400 containing basic information on all types of metal hose and tubing, fittings, etc.

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CITY, ZONE, STATE.....

TECHNICAL LITERATURE

Valves, Control—

Valves, Gate

Valves, Control.....Announces new 6 p. bulletin on company line of Speed King pilot operated control valves. Describes in detail the operation, uses, optional features, etc., of these valves. Bulletin SK356.
286A Valvair Corp.

Valves, Corrosion-Resistant.....Hard-boiled acids can't corrode Aloyco "Hastelloy" valves. These valves undergo a special annealing process that imparts better machining qualities. Request Bulletin 10.
286B Alloy Steel Prods. Co.

Valves, Diaphragm ..... Trouble-free plastic diaphragm valves—choice of general-purpose Ace-Ite, Ace Parlan (polyethylene) or Ace Saran. Handles most corrosive chemicals & food ingredients. Bulletin 361.
286C American Hard Rubber Co.

Valves, Diaphragm.....From antibiotics to the toughest acids, alkalis and salts, there is a combination of Hills-McCanna body and diaphragm materials that will best suit your needs. Request Valve Catalog.
286D Hills-McCanna Co.

Valves, Diaphragm.....Describes Grinnell-Saunders diaphragm valve with straight-through flow. Includes advantages, maintenance, design, selection of bodies and bonnets, etc. Fully illustrated bulletin.
286E Grinnell Co.

Valves, Diaphragm Control.....Throughout the entire range of valve travel—positioning is accurate & undistorted—control increments are finer with minimized positioning error. Full details in Bulletin CV-53.
286F Kieley & Mueller.

Valves, Diaphragm, Packless.....Eliminate stem leakage and maintenance on air, vacuum, gas, light oil and similar services. Available in wide selection of materials and sizes. Request Folder No. AD-1942.
286G Crane Co.

Valves, Drain.....Offers descriptive information on line of Strahman ram type valves . . . the only drain valves that cannot clog up. Made in any cast metal to meet your requirements. Request complete Catalog.
286H Strahman Valves.

Valves, Drain or Sampling.....New Jerguson Drain or Sampling Valve is completely self-draining, withstands severe conditions, and offers foolproof operation. Request complete details on Drain Valve No. 23.
286I Jerguson Gage & Valve Co.

Valves, Drop Forged Steel.....GP valves are setting new standards of performance in petroleum refineries, chemical plants, power plants, and related industries. Supplement No. 1 (Catalog F-9).
276 Henry Vogt Mach. Co.

Valves, Explosives.....New reference illustrates and describes the complete line of Conax Explosive Valves. Entire operation shown including the "normally closed" and "normally open" valves. Request Catalog No. 5501-XV.
286-J Conax Corp.

Valves & Fittings.....Descriptive reference, "Valves and Fittings for Ammonia and Freon-12," provides sizes, symbol numbers, dimensions and weights of valves, fittings and accessories. Request Catalog "O".
286K Frick Co.

Valves & Fittings, Drop Forged Steel.....400 p. book describes complete line of drop forged steel valves, fittings, & flanges for oil, steam, water, air, gas & refrigeration services. Catalog No. F-9.
286L Henry Vogt Mach. Co.

Valves, Fittings & Piping.....Catalog discusses Parks-Cramer jacketed piping layout, tubing jumpovers, materials, fittings, plug valves, relief valves, jacketed pipe, etc. Request Catalog No. 356.
286M Parks-Cramer Co.

Valves & Fittings, Plastic.....New corrosion-resistant valves & pipe fittings are molded of rigid polyvinyl chloride. A brochure explaining complete Walworth PVC product story is now available upon request.
286N Walworth Co.

Valves, Flow.....Simplicity & good design features in Powers Flowrite Valves. Accurate control results from smooth rolling diaphragm & minimum of valve stem friction. For complete details, request series 344 bulletins.
286O Powers Regulator Co.

Valves, Forged Steel.....The OIC 1231 gate valve and the 1621 globe valve are recommended for steam service up to 800° F . . . oil service up to 1000° F. Also for hydraulic service up to 2000 lbs. Request Form 195.
286P Ohio Injector Co.

Valves, Forged & Cast Steel.....Product line features the utmost in quality and performance. Condensed Catalog provides complete information on all Rockwell-built Edward forged and cast steel valves.
286Q Edward Valves.

Valves, Gate.....Feature properly designed, accurately finished seating of 18-8 SMo stainless steel—plus the extra erosion-corrosion resistance of No-Resist bodies & bonnets cast by Crane. Folder AD2047.
286R Crane Co.

Valves, Gate.....Offers data on sturdy, small forged steel gate valves. Superhardened gate and seats assure tight closure, smooth operation and low maintenance. Complete information offered in Catalog No. 10.
286S Chapman Valve Mfg. Co.

Valves, Gate.....Walworth's iron body gate valves with screwed or flanged ends reduce fluid turbulence to a minimum. Valves have eight outstanding features. For complete information, request Bulletin 106.
286T Walworth Co.

Valves, Gate.....Darling gate valves are made in metals, types and sizes for most services . . . and for pressures to to 1500 pounds. Feature fully revolving double disc parallel seat principle. Bulletin No. 5003.
286U Darling Valve & Mfg. Co.

Valves, Gate.....For pressures up to 150 lbs. & temperatures to 180° use iron body gate valves with permanently bonded hard rubber lining. In rising stem, cylinder or motor operated, or quick-opening types.
286V Darling Valve & Mfg. Co.

Valves, Gate.....G-A flowtrol valves are built to last a lifetime. Use the angle body and save the price of an elbow fitting. They operate with finger pressure. For more information, request Bulletin W-8A.
286W Golden-Anderson.

Valves, Gate.....Greenwood Gate Valve Line Blinds offer these features: no lifting of wedge; no spreading of line—just turn hand wheel; the simplest line blind on the market. See Bulletin No. GV-17.
286X Vernon Tool Co.



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TECHNICAL LITERATURE

1. VALVE TECHNICAL DATA . . . Twelve page technical manual giving design, selection, maintenance and repair data for stainess steel valves.

2. GETTING THE MOST OUT OF YOUR VALVES . . . Four page technical discussion explaining selection, installation, inspection and maintenance of stainless steel valves.

3. CATALOG 55D (VALVES) . . . Sixty-eight page simplified stainless steel valve catalog includes engineering drawings, weights, size ranges, dimensions and basic material data.

4. CATALOG 55F (FITTINGS) . . Complete stainless steel fitting catalog giving engineering drawings, dimensions and basic material data.

5. VALVES TO COMBAT CORROSION . . . 75 questions and answers selected from Cooper Alloy valve clinics covering materials, operations, service problems, installation and repair.

6. STAINLESS STEEL VALVES AND FITTINGS IN THE PAPER INDUSTRY . . . Eight page technical article covering alloys, valve selection, design factors, installation, maintenance, operation and inspection of stainless steel valves and fittings used by the paper industry.

7. PLASTIC PUMPS . . . Four page folder describing the Vanton "Flex-i-Liner" pump. Full and cut-a-way views, plus performance charts and material selection hints are included.

8. PLASTIC PIPE AND FITTINGS . . . 8 page catalog on Vanton P-Line (PVC), N-Line (Buna N) and S-Line (Styrene) pipe, valves and fittings.

9. PUMPING CORROSIVES . . . Four page article describing the transfer of hydrochloric, formic, lactic acid and salt solutions at Litho Chemical.

10. ADVANCED KNOW-HOW . . . Series of case studies showing how advanced know-how made possible the economical production of high alloy products considered difficult or impossible to cast.

11. MATERIALS SELECTION CHART . . . Four page chart designed to assist in the selection of the most economical alloy for a given corrosive problem. More than 350 specific corrosives are included.

12. DESIGN CONFERENCE . . . Special edition of Newcast containing the technical papers presented at the Cooper Alloy Design Conferences. Subjects incude Casting Design, Shell Molding, Cast Weld and New Materials.

13. ALLOY REFERENCE CHART . . . Revised four page pamphlet listing alloy designations, applications, properties and analysis of corrosion and heat resisting alloys.

14. STAINLESS STEEL CASTINGS ON PARADE . . . Four page folder presenting a variety of cast parts with information as to alloy, weight, application. Complete data chart listing twenty-eight alloys with recommendations for their use is included.

15. NEWSCAST . . . An eight page bi-monthly publication devoted to reporting technical material of value to those interested in corrosion resistant castings, fittings, valves and pumps.

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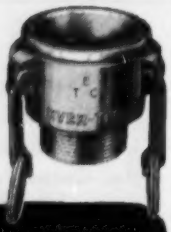
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Pipe, Fittings & Valves

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288A Jenkins Bros.

Valves, Gate & Check.....Powell "Ni-Resist" valves have greater corrosion, erosion, heat & wear resistance than ordinary cast iron. Especially adapted for handling soda & sulphate pulp, paper mill liquors, etc. Request literature.
269 *Wm. Powell Co.

Valves, Gate & Globe.....Design Factors of Stainless Steel Valves . . . offers a 4 p. Technical Folder explaining basic design factors which a good stainless steel gate or globe valve should incorporate.
288B Cooper Alloy Corp.

Valves, Globe.....Illustrated, 22 p. Gyro-seal Catalog describes product line: features (spinning disc, dual purpose seat, line contact between seat and disc); chemical and physical properties of materials; etc.
288C Richmond Foundry & Mfg.

Valves, Globe & Angle.....Jenkins bronze globe and angle valves with teflon disc and packing can improve efficiency and economy in your hookups for critical service. For further information, see Bulletin 116.
288D Jenkins Bros.

Valves, High Vacuum.....Offer hand or air-operated air-release, clapper, slide throttling, & bellows or O-Ring sealed globe, angle & wye high vacuum valves. Sizes ¼ in. to 24 in. Brochure V1.
352e *National Research Corp.

Valves, Hydromatic.....These valves assure easy, accurate control of ion exchange equipment. They are so constructed that it is impossible for them to be out of position during operation. Bulletin 4520-B.
288E Cochrane Corp.

Valves, Iron.....Reduce valve wear. Choose from 29 OIC iron valve numbers with 9 different trim & body metal variations. This line's many added features are completely described in the OIC Folder No. 1005.
288F Ohio Injector Co.

Valves, Lubricated Plug.....New manual covers lubricants for ACF plug valves. Profusely illustrated, it features cross sectional views of ACF valves & goes into detail regarding construction. Lube Manual No. 3.
288G ACF Industries.

Valves, Lubricated Plug.....28 p. catalog shows straightway, 3-way, 4-way, & multiple port lubricated plug valves for 250 lbs. oil-water-gas & 150 lbs. steam working pressure. Reference Book 39—5.
288H Homestead Valve Mfg. Co.

Valves, Lubricated Plug..... 36 p. covers complete line of iron and steel lubricated plug valves available. Many illustrations of singe, screwed and bolted gland type valves are shown. Request Catalog No. PV-4.
288I Wm. Powell Co.

Valves, Manual Reset.....Fireye Series 81G manual reset valves for use in automatically shutting off flow of fuel in oil and gas burners in cases of faulty operation, fully described in illustrated Bulletin CV-31.
288J Electronics Corp. of Amer.

Valves, Monel & Nickel.....New reference discusses the corrosion-resistant properties of Monel and nickel, listing specific applications for which each is suited. Request fully illustrated Bulletin No. 9.
288K Alloy Steel Products Co.

Valves, Needle.....The Marsh needle valve is now available in 416 stainless steel throughout. It is guaranteed for working pressure up to 10,000 psi. For complete details, request bulletin No. NV-2.
288L Marsh Instrument Co.

Valves, Needle.....New pressure gage needle valve features a one-piece alloy steel body, a welded bonnet for maximum safety, and a multi-compound, non-crushable V-type packing. Request full details.
288M Oil Center Tool Co.

Valves, Needle.....The bar stock valve will contribute ease of operation, low maintenance cost and neat appearance to your equipment. Valves have an O-ring stem seal—operates at a touch. Request Bulletin.
288N Hoke Inc.

Valves, Nickel Iron ....Designed for chemical process industries, valves are recommended for control of mildly corrosive liquids with minimum quantities of mineral acids. Details in Bulletin No. 118.
288O Jenkins Bros.

Valves, Packless.....At pressures of 600 psi & temperatures of 1000°F., Sylphon packless valves prevent corrosive or flammable fluids from leaking or creating hazards. For details, see Bulletin 813-JC.
288P Fulton Sylphon Div.

Valves, Pinch-Type.....Company announces a new line of flanged valves for handling corrosive materials or abrasive slurries, wet or dry. For details on features and advantages, request illustrated Catalog 1154.
288Q R. K. L. Valve & Mfg. Co.

Valves, Plug.....ACF valves are backed up by proof-of-performance in every processing industry. Descriptive reference furnishes complete information on the entire valve line. Request illustrated Catalog E-8.
288R ACF Industries.

Valves, Plug.....Exclusive eccentric action guarantees easy operation and dead-tight shut-off . . . resilient-faced plug seals without lubrication, without contamination. Company makes full details available on request.
281a *DeZurik Shower Co.

Valves, Plug.....No funnel action . . . because both ACF regular round & ACF rectangular port valves have port areas at least equal to the pipe itself. For complete details of features, see Catalog No. 5.
288S ACF Industries.

Valves, Plug.....Regrind-renew plug type valves with 500 Brinell armor seat—armored against valve-killing close control of steam . . . and abrasion. For complete information on company line, request Form No. 202.
288T Jenkins Bros.

Valves, Plug.....For special services—handling products that will harden or congeal at ordinary temperatures—Wedgeplug Valves can be supplied steam-jacketed. Offers full details in Wedgeplug Catalog 55-1-W.
288U Wedgeplug Valve Co.

Valves, Plug.....If your problem is temperature, pressure or corrosion . . . Homestead Lever-Sealed Plug Valves will solve it. Give extra long, leakproof service. Request our Valve Reference Book No. 39-3.
298V Homestead Valve Mfg. Co.

Valves, Porcelain .....Company makes available detailed literature covering the features and advantages of porcelain valves. Bulletin includes complete description, characteristics and specifications of product line.
288W Lapp Insulator Co.

Valves, Reducing.....4 p. bulletin describes two models of Spence direct-operated water pressure reducing valves. May be used with fast-acting equipment like flushometers & snap cocks. Request your copy.
288X Spence Engineering Co.

Valves, Reducing ..... A simple air loaded, diaphragm operated, pressure reducing valve that is virtually maintenance-free for steam heat or process steam application. Full details in Bulletin No. 561.
288Y Leslie Co.

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6200 unplasticized PVC (type I)
7200 high-impact PVC (type II)

THE ANSWER TO YOUR CORROSION PROBLEMS

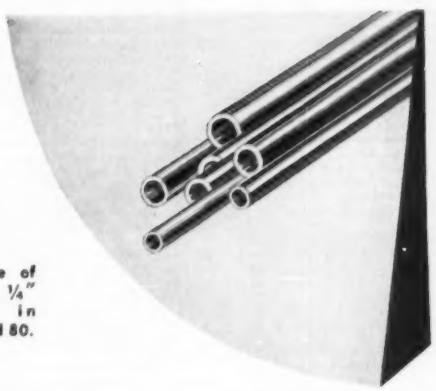
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PVC conventional fittings, the new shrink fittings and roll-thread fittings in a full variety of sizes.



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A complete line of corrosion-resistant valves in ⅓" through 2" sizes.



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A complete line of PVC pipe from ¼" through 6" in schedules 40 and 80.



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Corrosion-resistant PVC rods, blocks, sheets or pipe that can be fabricated to your specification.



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No more weak areas . . . no more costly shut-downs. BOLTARON unplasticized PVC stock is produced under rigid inspection standards. This insures uniform, complete and effective resistance to corrosion throughout your entire system — from the tiniest bushing to giant ducts.

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Pipe, Fittings & Valves

TECHNICAL LITERATURE

Valves, Reducing, High Pressure—
Valves, Teflon Seated

Valves, Reducing, High Pressure.....Includes photos, a cross-sectional engineering drawing, recommended uses, description of construction & operation features, capacity, rating & sizing charts. Bulletin S-731.
290A A. W. Cash Co.

Valves, Reducing, Pressure.....Recommended for critical control applications requiring unusually sensitive and accurate regulation . . . and extreme pressure reductions. For details, see Bulletin J-1160.
290B Jordan Corp.

Valves, Relief.....Aminco relief valves, with Stellite stems & seats, are available in three pressure ranges: 500-7500, 1000-15,000, & 5000-45,000 p.s.i. Dimensions: 3¼ in. diameter; 15¼ in. long. Superpressure Catalog 406-C.
290C American Instrument Co.

Valves, Relief.....Norwalk relief valves for relieving gas or liquid under pressure or vacuum & for maintaining constant pressure or vacuum on lines, holders & tanks. For complete details, see Bulletin 6500.
290D Norwalk Valve Co.

Valves, Rotary Airlock.....The Mikro Airlock is available for low or high pressure use. It is furnished with various types of rotors & vanes to meet specific requirements. See Rotary Airlock Bulletin.
290E Metals Disintegrating Co.

Valves, Safety Relief.....Features: economical "2 in 1" design, peak performance, absolute protection, & maximum interchangeability. Full range of sizes & pressures available. Request Catalog No. 1900.
290F Manning, Maxwell & Moore.

Valves, Segregating Slide.....Covers company's line of slide gate type of segregating valves for pneumatic materials handling systems. Includes data on application, design, operation, etc. Data Sheet Ua.
290G Allen-Sherman-Hoff Co.

Valves, Slide.....Data Sheet describes complete line of Universal Slide Valves, designed especially for use in pipeline transporting solid materials in liquids. Available on request, Data Sheet Ub.
290H Allen-Sherman-Hoff Co.

Valves, Solder & Socket-End.....For faster, trouble-free installation and lasting economy. Our Bulletin lists all Jenkins solder end and socket-end valves and gives instructions for soldering and brazing.
290I Jenkins Bros.

Valves, Solenoid.....Covers entire range of valves . . . for safe, dependable flow control of liquids, gases, air & refrigerants. Data on proper selection, features, coil construction, etc. Request Section C-Form RS141.
290J A-P Controls Corp.

Valves, Solenoid.....New ASCO 2-way solenoid valve with explosion-proof enclosure—designed to meet NEMA VII & UL requirements—offers safe, automatic control. "Solenoid Valves for Corrosive Applications."
290K Automatic Switch Co.

Valves, Solenoid.....New Type K solenoid valves feature all stainless steel construction of parts in contact with media. Velvetrol cushioned closing eliminates damaging shock & prolongs life. Details in Bulletin K.
290L J. D. Gould Co.

Valves, Solenoid.....Choose rugged industrial type Davis solenoid valves . . . for less downtime—less maintenance—more reliable control. For complete details of features, request copy of Bulletin 700.
290M Davis Regulator Co.

Valves, Solenoid.....Fully illustrated, 52 p. describes the complete line of Skinner solenoid valves. Includes general specifications, principles of operation, flow rate charts, etc. Request Catalog No. D1.
290N Skinner Elec. Valve Div.

Valves, Solenoid.....Illustrates and describes a complete line of electrically controlled magnetic valves. Includes data on application, construction, operation, specifications, etc. Magnatrol Catalog.
290O Magnatrol Valve Corp.

Valves & Specialties.....Gages and valves for the observation of liquids and levels. Available in stainless, monel, nickel, hastelloy and many other materials. Full information is available upon request.
290b *Jerguson Gage & Valve Co.

Valves, Spray.....To minimize build-up of PVC resins or similar products in a glassed steel vessel, Pfaudler offers a new glassed spray valve. For more complete information, request Bulletin 886.
290P Pfaudler Co.

Valves, Stainless Steel.....“Getting the Most Out of Your Valves” . . . provides a detailed, 4 p. technical discussion explaining selection, installation, inspection and maintenance of stainless steel valves.
287b Cooper Alloy Corp.

Valves, Stainless Steel.....Figure Number Cross Reference Chart . . . supplies descriptive literature—a 4 p. Folder which shows equivalent figure numbers of the five leading stainless steel valve producers.
290Q Cooper Alloy Corp.

Valves, Stainless Steel.....8 p. Technical Article covers alloys, valve selection, design factors, installation, maintenance, operation and inspection of valves and fittings used by the paper industry.
287f Cooper Alloy Corp.

Valves, Stainless Steel.....Offers technical data on stainless steel valves—a 12 p. booklet covering stainless steel valve design, selection, maintenance and repair. Request Product Bulletin VTD.
287a Cooper Alloy Corp.

Valves, Stainless Steel.....Announces availability of a 68 p. simplified stainless steel valve catalog which includes engineering drawings, wts., size ranges, dimensions & basic material data. Catalog No. 55D.
287e Cooper Alloy Corp.

Valves, Stainless Steel.....Jenkins Stainless Steel Valve Booklet illustrates and describes wide range of globe, gate, check and Y valves, includes selection data, survey forms. Request Form No. 200-A.
290R Jenkins Bros.

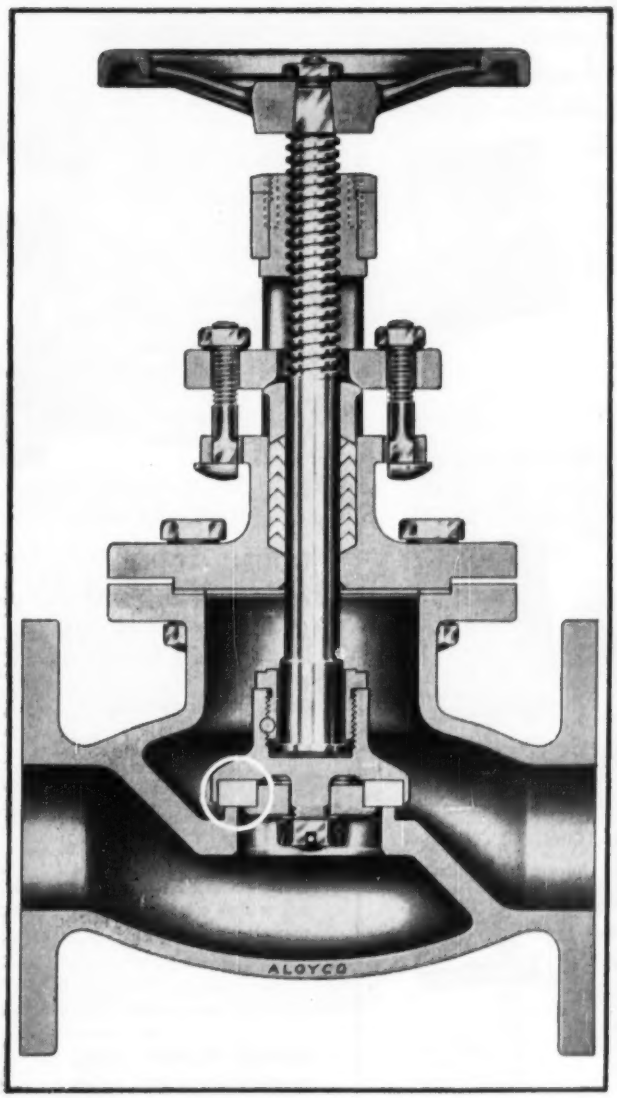
Valves, Teflon Seated.....Aloyco valves with renewable teflon discs out-last metal-to-metal seated valves. Leakage is prevented because of teflon's ability to seal. For full details, request Bulletin No. 6.
290S Alloy Steel Products.

Need some equipment?

Then you'll find this issue's Inventory of New Equipment right up your alley. It's a digest of the past year's major new developments in process equipment, the first complete roundup of its kind. You'll find it a handy tool for years to come (p. 145).

Teflon* forms gas-tight seal in corrosion resistant Aloyco valves

*Registered DuPont trademark.

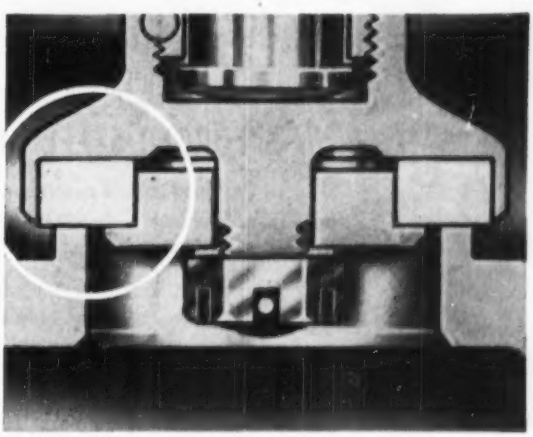


Hard-to-hold volatile or elusive fluids—even if highly corrosive—can't leak past the Teflon discs or packing in this Aloyco valve.

The reason? Teflon's ability to form a gas-tight seal under compression—*even when the seating surface or adjoining metal is slightly corroded.* That's why Teflon-equipped valves outlast and outperform valves with metal-to-metal seating surfaces in handling volatile corrosive fluids.

Add to that the fact that Teflon has high impact strength under hydraulic shock loads, and is inert to almost all chemicals up to 500° F., and you'll see why Aloyco pioneered the use of this unique material for discs, seats and packing in corrosion-resistant valves.

Aloyco valves with renewable Teflon discs, seats, and packing come with screwed or flanged ends in a variety of styles: globe, Y, angle, swing-check, needle, plug-gate—as well as sampling valves. You'll find them all described in our new bulletin No. 11. Mail coupon below for your copy. 6.4



ALOYCO GLOBE VALVE holds Teflon disc securely against possible overload.

Longer Lasting
ALOYCO
VALVES
1ST IN CORROSIVE SERVICE



Subsidiary of Walworth Company

Alloy Steel Products Company, Inc.
1301 West Elizabeth Avenue
Linden, New Jersey

Gentlemen:

Please send me a free copy of your new Bulletin No. 11 on Aloyco valves with renewable Teflon discs or seats.

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Address_____

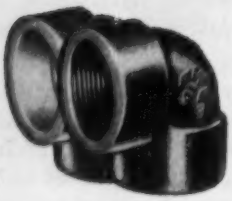
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WATSON-STILLMAN FITTINGS DIVISION

H. K. PORTER COMPANY, INC.
P. O. Box 95, Roselle, New Jersey

FORGED STEEL PIPE FITTINGS



Carbon Steel, ASTM A-105, Grade 2:
Provide maximum resistance to pressure, heat, shock and vibration. Available in Screw-End Type in 2,000, 3,000, 6,000 lb. class; Socket-Welding Type for Schedule 40, 80, 160 and Double-Extra Heavy Pipe. Sizes ⅛" to 4" I.P.S. Send for Bulletin A-3-50.



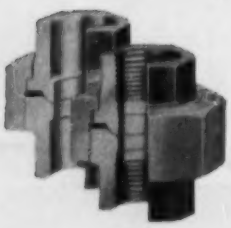
FORGED STAINLESS and ALLOY STEEL FITTINGS



Watson-Stillman high strength Screw-End and Socket-Welding Fittings are also available in a variety of alloy materials for high temperature and corrosive services. Sizes ¼" to 2" in same pressure classes as carbon steel fittings. Materials include stainless steel Types 304, 316, 347, 304-L; also 1¼% Cr–½% Moly, 2¼% Cr–1% Moly, and 4-6% Cr— and Monel. Bulletin S-1-55.



W-S FORGED STEEL UNIONS



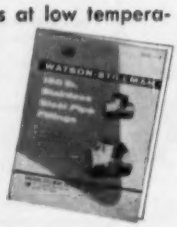
Designed to AAR specifications and manufactured in accordance with ASTM A-105, Grade 2, Watson-Stillman 3,000 lb. Forged Steel Unions are available in Screw-End and Socket-Welding Types, sizes ⅛" to 2". Outstanding features include steel-to-steel seating, ball-to-angle mating surfaces and cadmium plated nuts. Bulletin U-1.



W-S 150 lb. STAINLESS STEEL FITTINGS



Ideal for standard pressure services (300 psi cold non-shock and 150 psi steam pressure) requiring corrosion resistance or toughness at low temperatures. Available in Screw-End and Socket-Welding Types, sizes ⅛" to 2", Types 304 and 316 stainless steel.
Bulletin S-3-55.



SPECIAL FITTINGS

W-S CLAMP RING UNION

The W-S Clamp-Ring Union takes the effort out of piping installation. Only one wrench needed to tighten it because of self-locking bolt heads. Available in Screw-End, Butt-Welding and Socket-Welding Types.



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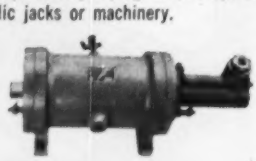
The orifice size is plainly stamped on the tab for positive identification.

Other special fittings to meet your specifications. Send us a drawing or sketch for quotation.



DOUBLE-ACTING AIR-ENGINE PUMP

A compact, lightweight hydraulic pump for many applications: For Hydrostatic testing; as a hydraulic pumping unit; to operate hydraulic jacks or machinery.



Simply connect the pump to your shop air line or field compressor. Delivers hydraulic pressures of 2,000, 4,000, or 6,000 psi.
Bulletin A-5

HAND PUMPS AND INDEPENDENT JACKS

W-S Hand Operated Pumps are available in single and double plunger types, with maximum pressure deliveries of 3,000, 6,000, 10,000 psi.



Hydraulic Jacks with independent pumps available in capacities of 20 to 500 tons. Simple, compact cylinder and ram, providing maximum rise with minimum overall height.

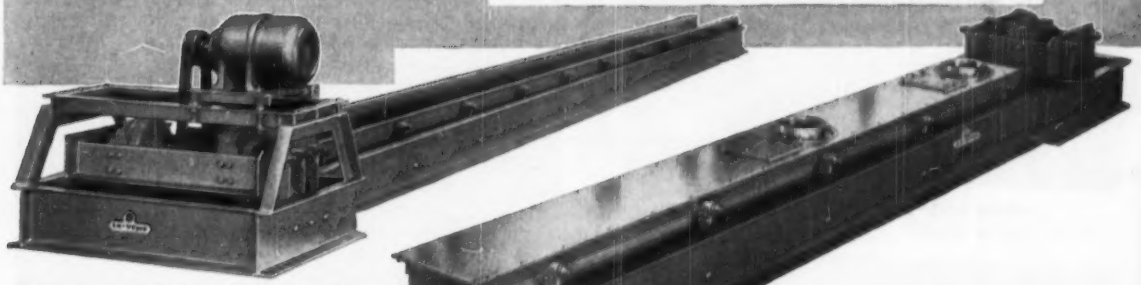


AJAX® LO-VEYORS

VIBRATING TYPE

Combine Sanitation, Large Capacity, Adaptability, Low Power and Maintenance Costs

FOR MULTI-PURPOSE HANDLING AND PROCESSING OF BULK MATERIALS



AJAX OPEN AND CLOSED PAN LO-VEYORS

Ajax Pan Type Conveyors are made in lengths from 3 ft. up. They are available with open pan, or booted covers to safeguard critical processes or formulas against contamination. Conveyor pans can be arranged for simultaneous screening, washing, drying, cooling and other operations.

AJAX TUBULAR LO-VEYORS



Tubular construction provides sealed, gas tight operation in closed systems under vacuum or pressure. Diaphragm seals can be used where tube passes through walls of processing plants.

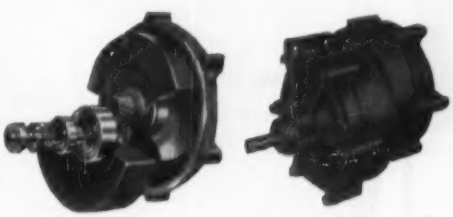
AJAX SCREENS



Ajax Screens meet the ever closer limits of standardization in graded materials. They provide accurate separation, high capacities, minimum floor space, long cloth life and low power costs.

AJAX SHALER SHAKERS

The Ajax Shaler Shaker is in automatic balance. Lo-Veyors can be set on floor or hung from ceiling or wall without heavy anchorage.



AJAX PACKERS



Ajax Packers are used for compacting bulk materials into bags, cartons, boxes and drums. Self-contained and easily integrated in production lines.

AJAX VIBRATING LO-VEYORS ARE SELF-CONTAINED

Ajax Vibrating Lo-Veyors are self-contained and require little headroom for drive and pan. They are easily and quickly installed on or below floor levels, or suspended from walls or ceilings.

Stringy, elongated, abrasive, fine or coarse mesh materials never hang up while being conveyed in Ajax Vibrating Conveyors. The positive upward and forward tossing action keeps materials flowing freely and evenly.

Made in a wide range of sizes and lengths, they are being used from beginning to end in progressive chemical processing. *Write for Bulletin 39.*

AJAX FLEXIBLE COUPLING CO. INC.

Representatives in Principal Cities **WESTFIELD, N. Y.**

Accelerator, Particle

Most powerful radiation source available. (294A)

. . . Radiation in the form of electrons, x-rays, positive ions or neutrons all can be produced by the new 3-million-volt Van de Graaff particle accelerator. It's reported to be the most powerful and versatile machine radiation source now available commercially. Machine can sterilize drugs, preserve foods, crosslink plastics and initiate chemical reactions such as polymerization, halogenation.—*High Voltage Engineering Corp., Cambridge, Mass.*

Aerator, Industrial Waste

For faster dispersion of gas in liquid. (294B)

. . . The Cavitator system in aerating industrial waste and sewage is now being offered as a process tool. Boasting a transfer efficiency of 35%, it uses only 120 cu. ft. of air per lb. of B.O.D. removed when handling domestic waste with an initial B.O.D. of 220. Other types of equipment require 800 cu. ft. of air to produce similar results. In the Cavitator system, gas is dispersed mechanically by agitating the liquid with sufficient force to produce regions of cavitation. Then the gas to be dispersed is introduced into these regions. Thorough circulation is obtained by using a draft tube.—*Yeomans Brothers Co., Melrose Park, Ill.*

Autoclave

Built with water-cooled drive shaft. (294C)

. . . A high-pressure autoclave now is available with a water-cooled drive shaft to lengthen the life of the packing. It can be furnished for pressures from 500 to 30,000 psi. and capacities from 1 liter to 20 gal., is built in stainless steel, Hastalloy, Monel or others. Agitator is designed for all types of catalytic material.—*High Pressure Equipment Co., Erie, Pa.*

Autoclaves, Automatic

True push-button operation. (294D)

. . . Autoclaves offered for processing materials such as rubber and plastics feature true push-button operation. Once the cycle is started by pushing a button, all steps are controlled automatically. One man and a helper can operate as many as eight.—*Philips & Davis, Inc., Kenton, Ohio.*

Bubble Caps

Stand rough use. (294E)

. . . Bubble cap and riser assemblies are being offered cast in precision form of glass reinforced furfural-ketone resin with carbon loading. Withstand rough treatment and temperature to 350 F. Resist all solvents, alkalis and most acids.—*Carl Buck & Associates, Essex Falls, N. J.*

Burner, Sulfur

Long service life. (294F)

. . . Chemipulp-KC jet-type sulfur burner is unusually compact, operates efficiently at all SO_2 gas concentrations from 12 to 18½%, burns dark and light sulfur at 2,100 F.—*Chemipulp Process Inc., Watertown, N. Y.*

Centrifugal, Automatic

Batch type controlled by timer. (294G)

. . . Automatic control of the Fletcher vertical, batch-type centrifugal is available via a program timer in conjunction with a two-speed magnetic motor starter and electrically operated air valves. Control can recycle the machine automatically, await manual starting for each cycle or operate automatically only on unloading.—*Fletcher Works, Inc., Philadelphia, Pa.*

Centrifugals, Continuous

Two new units give maximum dryness in solid-liquid separation. (294H)

. . . Two German-designed continuous screen centrifugals have recently been adapted for U. S. application by two American centrifugal manufacturers. Merco Centrifugal Co. has introduced the Mercone machine, patterned after the German Contessor unit used widely for many years in chemical and food processing throughout Europe. Bird Machine Co. is offering the Bird-Humboldt centrifugal which, within the past two years, has demonstrated some outstanding advantages in European service. Merco, with wide experience in applying its well-known nozzle-bowl centrifugal to starch processing, expects the Mercone greatly to improve fiber removal. And the company also expects it to improve dewatering in this industry. Bird looks to dewatering of ¼-in., 100-mesh granular solids as the field where the Bird-Humboldt will improve continuous operations.—*Bird Machine Co., South Walpole, Mass.; Merco Centrifugal Co., San Francisco, Calif.*

Chiller

Chills water from steam by absorption. (294I)

. . . Using economical sources of heat, a new type absorption refrigerating machine for large capacity installations puts out more cooling per unit weight than any other type. Designed to cool at low cost, this machine adjusts automatically from full load down virtually to zero with very little loss in efficiency.—*Carrier Corp., Syracuse, N. Y.*

HORIZONTAL PROCESSING

may be the solution for your problem

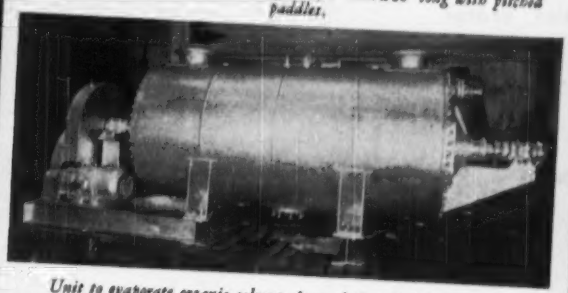
BETHLEHEM HORIZONTAL UNITS OFFER SOLUTIONS TO THESE PROBLEMS

- Processing of High Consistency Materials
- High Heat Transfer Rate, Vigorous Mixing, and Intense Shearing
- Exposure and Renewal of Surface
- Minimum power input for required action
- Continuous or Semi-continuous Operation

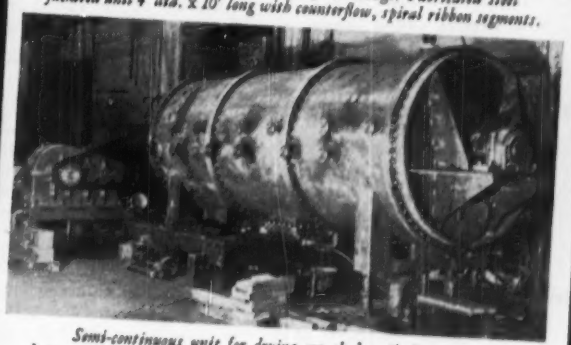
HORIZONTAL UNITS DESIGNED and FABRICATED TO SOLVE SPECIFIC PROBLEMS



Batch blending and heat transfer provided by this unit. Stainless steel, stud-bolted steel jacket, 4' dia. x 10' long with pitched paddles.



Unit to evaporate organic solvents from sludge. Fabricated steel jacketed unit 4' dia. x 10' long with counterflow, spiral ribbon segments.



Semi-continuous unit for drying ore sludge. 5' dia. x 16' long scraper surface dryer undergoing mechanical and hydrostatic tests in our plant.

FOR DIFFICULT OPERATIONS SUCH AS:

- Evaporation of Water and Solvents from Slurries, Sludges and Pastes
- Reaction between Gases, Solids or Material of High Consistency
- Drying of Solids
- Continuous Reaction to Produce Formic Acid, Gypsum and Urea

CALL ON BETHLEHEM'S YEARS OF EXPERIENCE

in designing and building equipment to solve your horizontal processing application. We have designs which may be easily adapted to your process, or we can design units tailored to meet your need.

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PROCESSING EQUIPMENT DIVISION

BETHLEHEM PENNSYLVANIA

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Classifier, Spiral

High efficiency on particles below 325 mesh. (296A)

. . . Powders with mixed particle sizes now are split into desired size ranges that are cleaner and more sharply defined than was possible previously. So report several U. S. and numerous European processors now using the Alpine Mikroplex spiral classifier. Machine features a rotating separation chamber that eliminates drag turbulence to achieve high uniformity in the air flow pattern. Within this close-to-ideal environment, powder is separated into two sharply divided fractions. Classifier is available in three sizes. — *Lukens Laboratories, Newton, Mass.*

Concentrator, Sludge

Works without chemical coagulation. (296B)

. . . By using two unique stages in series the Edco Sludge Concentrator discharges a 27-32% solids sludge that can be trucked to disposal point or burned without additional fuel. Operating continuously, the concentrator uses only one-tenth of the power required by vacuum filters handling an equal amount of sludge. Chemical flocculation of the feed is now needed. Sizes available start at 1 ton dry weight capacity per 24 hr. Total power requirement is only 1/3 hp. per ton of dry weight solids per 24 hr.—*Equipment Development Co., Inc., Montclair, N. J.*

Cooler, Water

For outside installation without enclosure. (296C)

. . . The CenTraVac centrifugal water chillers, available in 50 to 800 ton sizes, are mainly for use at large existing plants where existing space for such an installation is not available. To eliminate need for enclosure, the purge unit, control panel, conduit boxes and capacity control mechanism have been weather-proofed.—*Trane Co., La Crosse, Wis.*

Crusher

For chemical use. (296D)

. . . Crusher, for chemicals and fertilizers, reduces moist, granulated and pelletized solids with minimum production of fines and oversize. Internals cleaned easily.—*Pennsylvania Crusher Div., West Chester, Pa.*

Crusher

Breaks caked lumps. (296E)

. . . Caked-up chunks or lumps of material up to 16-in. are reduced to desired size by Supreme 502P Crusher. Delumping rate: 5 to 15 tons/hr. Automatic feed.—*Franklin P. Miller & Son, Inc., East Orange 1, N. J.*

Cyclone, Liquid

Aims at higher yields. (296F)

. . . New to the field of cyclone separation, the CMI Clust-R-Clone groups several cyclones around a central manifold. Not only is space saved but operation is coordinated for maximum efficiency. Design features of individual units include: removable effluent chamber, effluent and feed mains with standard pipe and flange fittings, feed chamber and main body of wear-resistant alloy.—*Centrifugal & Mechanical Industries, St. Louis.*

Demineralizer

For extreme purity at low cost. (296G)

. . . Operating on the mixed-bed principle, the new MA-500 monocolumn demineralizer produces up to 500 gph. of water with resistivities as high as 15 to 20 million ohms. Cost is only a few cents per 1,000 gal. Only one regenerant tank is supplied because the acid is drawn directly from its container.—*Penfield Mfg. Co., Inc., Meriden, Conn.*

Disintegrator

For an exceptionally wide use range. (296H)

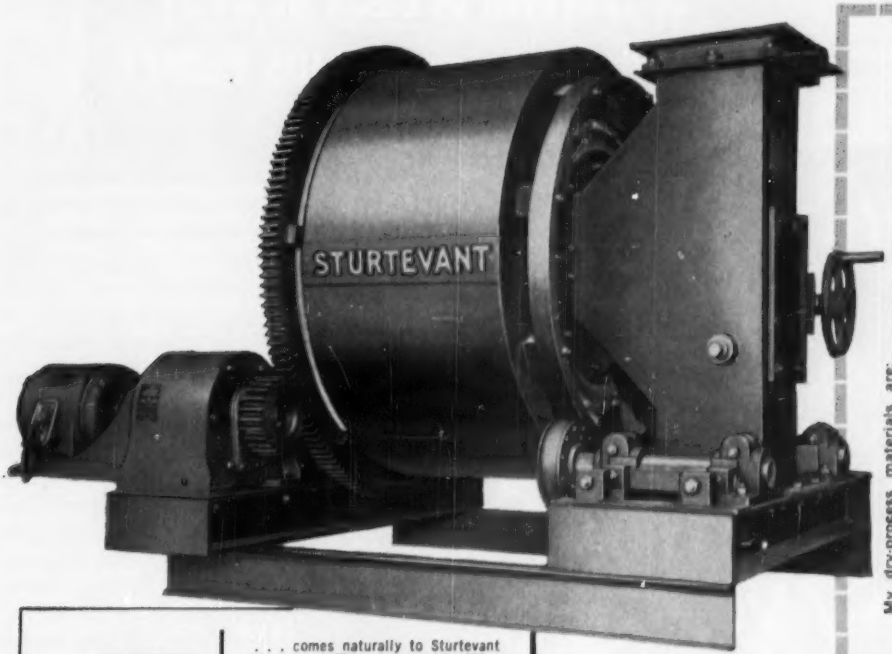
. . . Model RI disintegrators, added to the Rietz line of size reduction equipment, handle an exceptionally wide range of applications throughout the chemical processing industries. They are suitable for mounting in reaction vessels and for dispersing liquids under pressure. They are ideally adapted to uniform, low-temperature size reduction and mixing of difficult-to-handle pasty masses.—*Rietz Mfg. Co., Santa Rosa, Calif.*

Door, Quick-Opening

Cuts heat exchanger maintenance. (2961)

. . . Time to open heat exchangers, autoclaves and the like is reduced considerably by a new self-seating, quick-opening, Lever-Lock door. It is particularly suited for use on heat exchangers that carry fouling liquids necessitating frequent entry.—*Patterson-Kelley Co., E. Stroudsburg, Pa.*

COSTS OF BETTER BLENDS CUT TWO TESTED WAYS



ENGINEERING BLENDING AND OTHER DRY PROCESSES TO SPECIFICATIONS

. . . comes naturally to Sturtevant Engineers. They have a tradition of solving dry-processing problems since 1873. Sturtevant custom-built equipment and plants are well-known for their low-maintenance-cost operation. If your problems include any of the processes listed on the coupon, it will pay you to investigate.

Sturtevant Dry-Batch Blenders:

1. **SPEED UP PRODUCTION WITH 4-WAY MIXING**
2. **SHORTEN SHUT-DOWNS WITH "OPEN-DOOR" DESIGN**

Batches from 500 to 40,000 pounds come out of Sturtevant Dry-Batch Blenders exactly as you want them. They are completely blended regardless of the varying weights, densities or fineness of the different ingredients. And no dust is lost in the process. **Four different vertical and lateral mixing actions** inside the sealed rotating drum achieve thorough blending in minimum time. Single lever control of a single gate speeds up loading and discharging.

"Open-Door" accessibility makes cleaning and maintenance a matter of minutes. This original Sturtevant advantage plus 75-year-tested rugged construction assures more output per machine-year. Check the coupon for more information.

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Dry Processing Equipment

The "OPEN-DOOR" to *lower* operating costs over *more* years

CRUSHERS • GRINDERS • MICRON GRINDERS • SEPARATORS
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My dry-process materials are:_____

Desired capacity is:_____

Name_____ Title_____

Firm_____

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Please send me your bulletin on Dry Blenders ☐

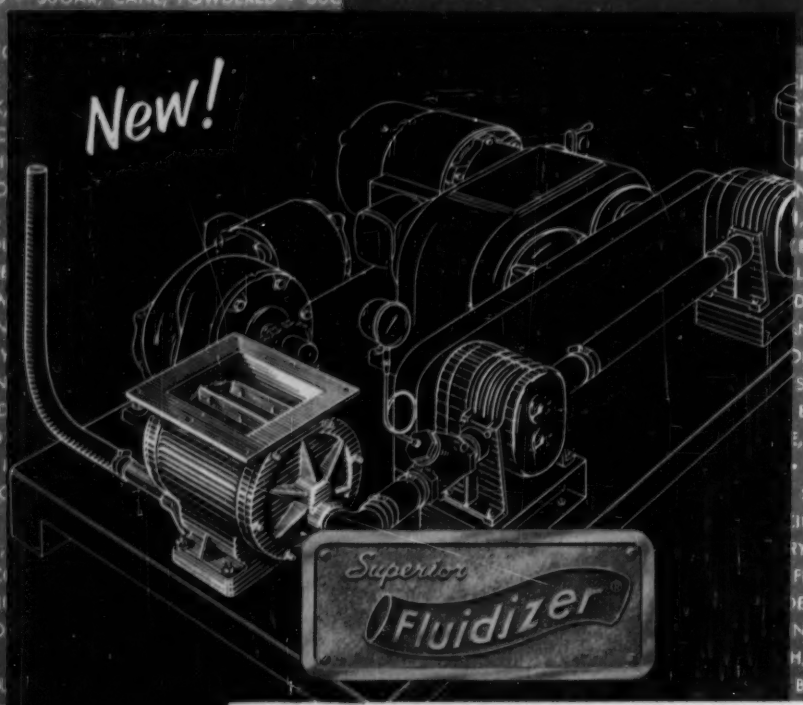
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☐ MICRON-GRINDING ☐ SEPARATING ☐ BLENDING
☐ SUPERFINE SELECTING ☐ GRANULATING ☐ CONVEYING

For Inquiry Code Numbers, See Master Index on Page 361

From cake mixes to plastics . . .

most powdered materials can now be conveyed as easily as water with this unique SOLIDS PUMP!





"FLUIDIZER" solves many industry moving and conveying problems

by: **WM. BURNET**
Chief Engineer
Process Machinery Division
Superior Separator Company

The Superior "FLUIDIZER" is creating a lot of interest in many industries. Engineers and executives from an average of 8 companies per week visit our laboratories to learn more about this new solids pump. Many bring samples of their products for testing purposes. In addition, samples arrive every day from other companies who want to know, "Will it fluidize?" Usually our answer is "Yes", our laboratory has now listed almost 100 materials which fluidize satisfactorily.

If you have a finely-divided product which must be moved, perhaps you will find the "FLUIDIZER" will perform more economically and satisfactorily than previously existing methods. Our research and testing facilities are open to you. We will be happy to test your materials and submit the findings.

Call or write today for our illustrated "FLUIDIZER" booklet. It contains the whole story of fluidization and the "FLUIDIZER'S" application to industrial transporting of powdered solids.

PROCESS MACHINERY DIVISION

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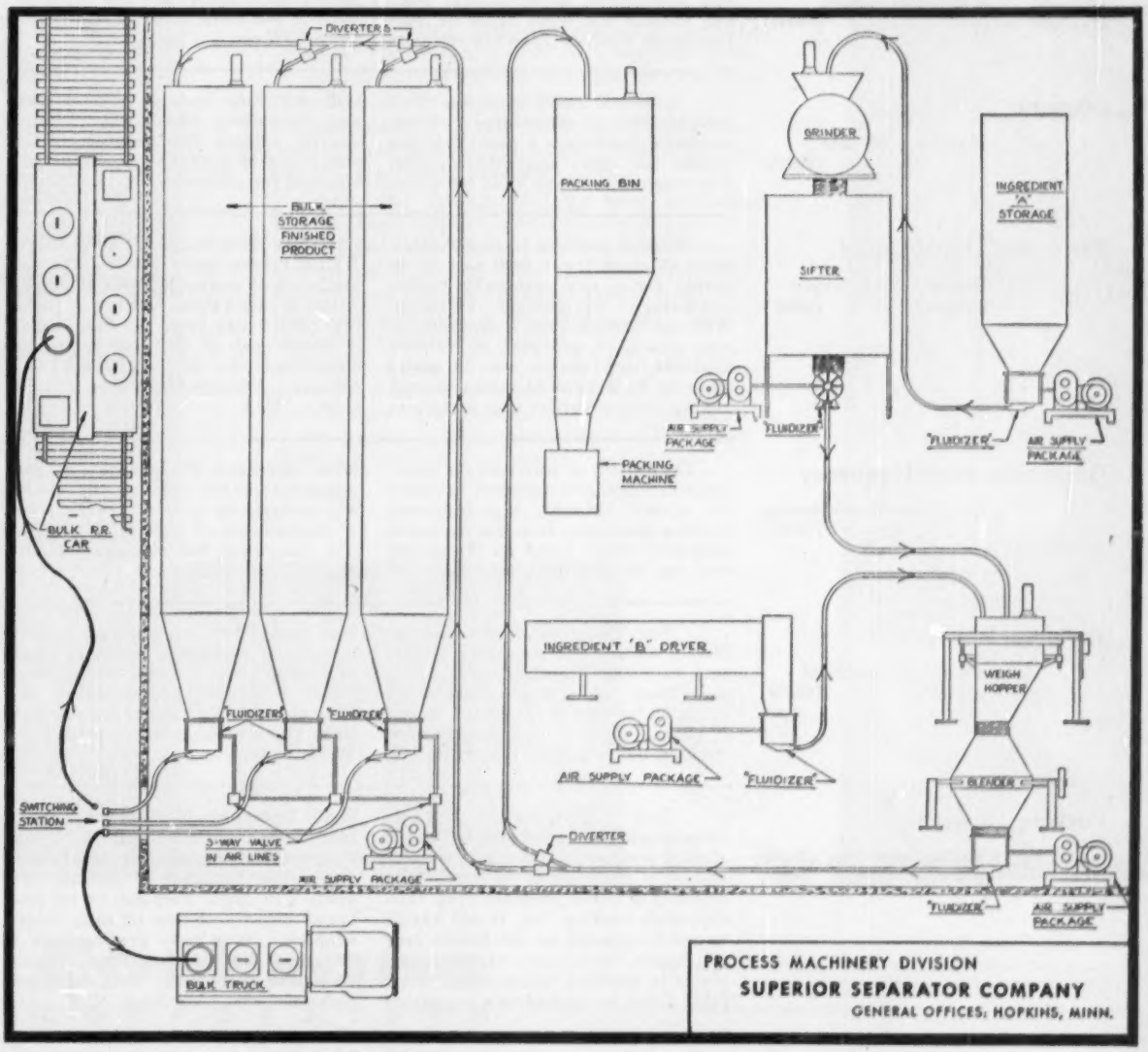
Every day, companies like yours are finding new uses for the Superior "FLUIDIZER"®

The schematic drawing below probably doesn't resemble your operations nor, for that matter, those of any other single plant. It does, however, illustrate a few of the many ways industry is using the Superior "FLUIDIZER"... and using it profitably!

Look at the "FLUIDIZER", the new solids pump, as you would a liquid pump and piping system. For years you have probably been pumping liquids, and handling and shipping them by bulk. Now, with the "FLUIDIZER" you can handle powders, flakes, fine granulars, small crystals, spray or drum-dried materials, small pellets and many, many other products in the same convenient way.

You are aware of the well-documented phenomenon of powdered materials in a fluidized state . . . reactors, catalytic cracking units, etc., have made use of it for years. The employment of this principle in a simple and efficient materials-transport system has been Superior's goal for over four years. Now, we are proud to introduce the "FLUIDIZER" to you to consider for use in your operations. You can expect—and profit from—the important advantages listed below.

1. **High solids-to-air ratio (between 100 and 200 to 1) resulting in elimination of dust collecting equipment.**
2. **Lower power requirements.**
3. **Small conveyor lines (1" to 4" I.D. tubing) easily installed in existing facilities.**
4. **Capacities from 50 to 1000 pounds per minute.**
5. **Low maintenance cost.**
6. **Negligible clean-up problems.**
7. **Flexibility that precludes extensive costly field engineer work.**
8. **Easy adaptation to automatic operations.**
9. **Completely engineered and integrated systems ready for quick installation.**



PROCESS MACHINERY DIVISION
SUPERIOR SEPARATOR COMPANY
GENERAL OFFICES: HOPKINS, MINN.

Inquiry Code Number for This Advertisement 298-9

Dryer, Horizontal

Pilot size, spray type. (300A)

. . . Horizontal, pilot size spray dryer has been installed by Buflovak for developing techniques in spray drying chemicals, drugs and foods. Unit features extreme flexibility for drying products that can be atomized through a nozzle.—*Buflovak Equipment Div., Blaw-Knox Co., Buffalo, N. Y.*

Dryer, Pilot

Rotary type, three models. (300B)

. . . Ruggles-Coles rotary dryers now are available in a selection of three models for pilot plant use. All units are extremely compact, require only fuel and electrical connections before they start operating. They can be moved easily from place to place.—*Hardinge Co., York, Pa.*

Dryer, Spray

For pilot operation. (300C)

. . . New conical laboratory spray dryer offers greater drying capacity than manufacturer's popular table model. With a choice of either nozzle or centrifugal atomization dryer is rugged, disassembles rapidly and cleans easily.—*Bowen Engineering, Inc., North Branch, N. J.*

Evaporator

For pilot study of heat transfer processes. (300D)

. . . A portable, laboratory model Turba-Film evaporator now is available for studying evaporation, single-step distillation, deodorization, heating, cooling and other types of heat treatment. Built of Type 316 stainless throughout, the one square foot unit can utilize heating mediums up to 250 psig. and 700 F. Baffles in the jacket permit use of hot oil as a heat transfer medium.—*Rodney Hunt Machine Co., Orange, Mass.*

Extractor

Handles 500 gpm. (300E)

. . . A recent addition to the Podbielniak line of centrifugal countercurrent extractors is a giant that can handle 500 gpm. combined streams. The original unit was built for chemical extraction systems with mixing and separating problems. A 10-ft. gravity column 100 ft. high would match this 42 x 42-in. machine.—*Podbielniak, Inc., Chicago, Ill.*

Extractor, Liquid-Liquid

Baffles permit larger columns. (300F)

. . . Reliable scale-up to larger diameters at much lower final cost is reported for a new internally baffled, multi-stage liquid-liquid extractor. Whereas manufacturer's previous design was most practical up to 4-ft. diameter, new design can be scaled up to 12 ft. Horizontal baffles in each mixing section restrict flow pattern to relatively short height. Resultant low HETS values make possible the installation of a large number of stages within a single shell. Amount of packing needed has been cut drastically. A great deal of the cost saving is attributable to this cutback.—*York Process Equipment Corp., West Orange, N. J.*

Generator, High-Frequency

For ultrasonic processing. (300G)

. . . The barrier of high cost for ultrasonic processing is reported breached by a new low-cost, high-frequency rotating generator. It means favorable laboratory work based on ultrasonics now can be translated into full scale plant production. For example, a 5 kw. generator driven by a 15 hp. motor will energize up to 10 submersed 400-w. transducers of any type.—*Acoustica Associates, Inc., Glenwood Landing, L. I., N. Y.*

Packing, Tower

Improves gas-liquid contact. (300H)

. . . New Spraypak tower packing, ideally suited for gas-liquid service such as distillation and absorption, is a cellular structure formed from strips of a special expanded metal. It offers: capacity double that with ordinary plates and packing; H.E.T.P. less than 2 ft., substantially independent of diameter; moderate pressure drop; low liquid holdup; even liquid distribution across tower despite entrance through one pipe only; low cost.—*Fractionating Towers, Inc., West New York, N. J.*

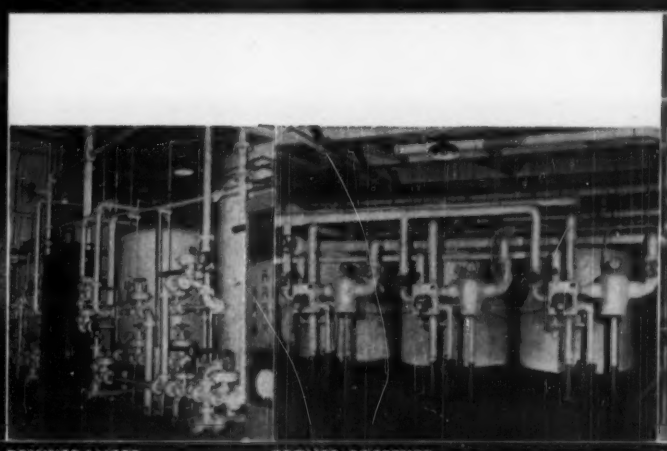
Packing, Tower

Knit-wire packing affords gas-liquid contact. (300I)

. . . Stuff a pipe with a rolled-up sweater and you have the rough equivalent of a column packed with Goodloe knit-wire packing. It operates with probably a lower pressure drop than any other packing. Yet, it will handle as much capacity as the bubble tray and boosts the number of theoretical plates in existing columns five to six fold. It can be applied to a variety of vapor or gas-liquid contacting needs such as distillation, cooling water for air conditioning, stripping, absorption. The rolled pancakes of packing are about 6 in. high. They can be set into tower directly on top of each other, supported by subway grating bars 1 in. apart. Intermediate supports can be located every 10 or 12 ft.—*Packed Column Corp., New York, N. Y.*



DEAERATOR

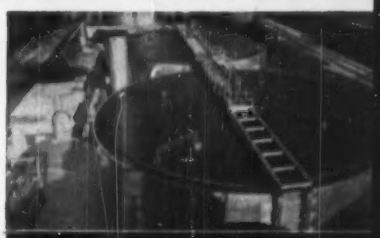


DEMINERALIZER ZEOLITE SOFTENER



HOT PROCESS SOFTENER

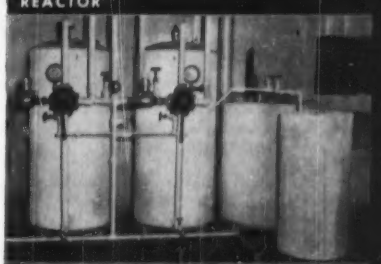
Engineering and Equipment by **Cochrane** *assure complete water conditioning service*



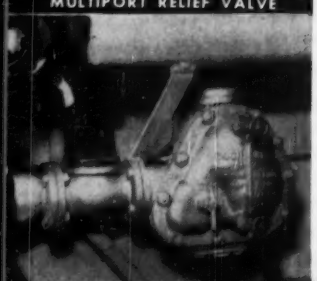
REACTOR



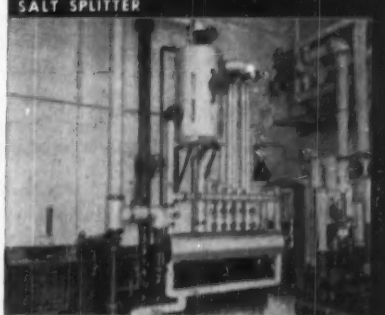
MULTIPORT RELIEF VALVE



SALT SPLITTER



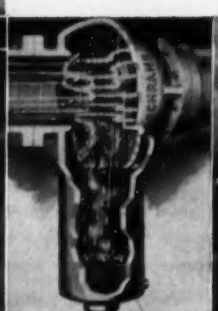
MULTIPORT DRAINER



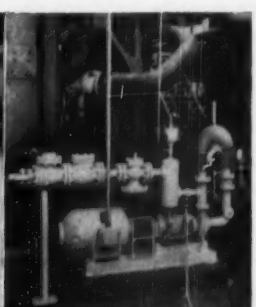
CONTINUOUS BLOW-OFF



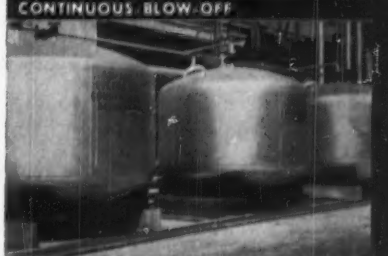
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For over half a century Cochrane Corporation has pioneered major developments in the field of water conditioning. Today, Cochrane leads in installation of deaeration, hot process and hot lime zeolite equipment.

Development of the Cochrane Hydromatic Valve sets a new standard in automatic control for Ion Exchange Processes.

Cochrane's background as heat engineers has also been responsible for the development of steam specialties recognized and used throughout industry today. The C-B Jet Pump improves heat transfer, reduces drying costs with resultant product improvement and usually increases production output.

This complete service, available at Cochrane, provides a single responsibility for continuous satisfactory operation of every installation. It is an assurance that guarantees will be met. Why not consult Cochrane?

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Demineralizers • Hot Process Softeners • Hot Zeolite Softeners • Dealkalizers • Reactors • Deaerators • Continuous Blowoff Systems • Condensate Return Systems • Specialties

Packing, Tower

Better performance on corrosives. (302A)

. . . Operating performance far superior to random packing is reported for carbon Paragrid tower packing. It can handle most complex acid, alkali and solvent liquors. It is built up from grid slats that have been preassembled into grid elements. Grid slats are spaced equally.—*Powell Duffryn Carbon Products Ltd., Hayes, Middlesex, England.*

Pelletizer

For iron ore. (302B)

. . . For the first time in North America, a spinning disk is used commercially to pelletize iron ore. No binders, plasticizers or solid fuels. At International Nickel's Copper Cliff, Ont., plant.—*Dravo Corp., Pittsburgh.*

Pilot Plant Tools

Mill, dissolver. (302C)

. . . Pilot plant tools now available are a small all-stainless steel mill and small scale dissolver. Designed especially for product development, laboratory control work.—*Morehouse Cowles, Inc., Los Angeles, Calif.*

Reactors, Glassed

3,000 and 4,000 gal. (302D)

. . . Glassed steel reactors with 3,000 and 4,000 gal. capacities now are available as standard models to reduce fabricating time and eliminate need for special engineering.—*Pfaudler Co., Rochester, N. Y.*

Reactors, Pilot

Duplicate action of full size units. (302E)

. . . The difficult transition from lab-scale continuous processing to full plant production is eased by resorting to new Flowmaster continuous reactor and mixing assemblies. For the first time, methods and cycle time on a production setup can be determined economically beforehand on a semi-plant assembly.—*Marco Co., Saginaw, Mich.*

Reactors, Small

New features extend utility. (302F)

. . . Construction features added recently to Pfaudler's small (5 to 100 gal.) glass reactors include pressure lubricator for seals and new hydraulic or air motor drives. Also, vessels can be converted to high pressure rating with standardized parts.—*Pfaudler Co., Rochester, N. Y.*

Screen, Gyratory

Variable speed. (302G)

. . . A new gyratory screen with variable speed drive gives throughputs much higher than conventional constant-speed machines. Speed can be 1,220 to 3,600 cycles per min.—*J. M. Lehmann Co., Lyndhurst, N. J.*

Screen, Heated

Unsticks sticky stuff. (302H)

. . . This heated screen handles damp and sticky materials without blinding or fouling during the screening operation. Clay-handling, agricultural lime production and other chemical process industries will benefit by this development.—*Simplicity Engineering Co., Durand, Mich.*

Screen, Vibrating

For high capacity loads. (302I)

. . . Vibrating screen now on the market is especially suited for dewatering high capacity loads and sizing of material where headroom is limited. Either one or two decks.—*Link-Belt Co., Chicago 1, Ill.*

Screen, Vibrating

Runs at higher speed. (302J)

. . . Speed of the HS Vibrex screen is 30 to 80% greater than previous models. At the higher speed, this new screen requires less headroom than did previous models.—*Hewitt-Robins, Inc., Stamford, Conn.*

Screen, Vibrating

High speed ups capacity. (302K)

. . . Screening rates and efficiencies are said to be greater with a screen that vibrates at 3,700 cycles per min. In this manner, screen size is reduced and less expensive cloth is needed.—*Derrick Mfg. Co., Buffalo, N. Y.*

Scrubber, Polyethylene

Handles hydrofluoric. (302L)

. . . Polyethylene is being used in equipment as large as scrubber measuring 4 ft. in dia. and 5 ft. high which was made to handle hydrofluoric acid and fluorides.—*American Agile Corp., Maple Hgts., Ohio.*

Separators, Magnetic

Lab scale reproduces commercial size. (302M)

. . . Separation of dry, granular, weakly magnetic materials from non-magnetic materials can now be accomplished efficiently on the laboratory scale with this high intensity magnetic separator. Excels in purification of silica sand, borax, feldspar.—*Exolon Co., Tonawanda, N. Y.*

YORK Technical Literature

1 Yorkmesh DeMisters, Entrainment Separators and Mist Eliminators

A bulletin describing the clean separation between liquid and vapor in all types of process vessels by means of Yorkmesh DeMisters. Information covers construction, types, applications, engineering data and installation instructions for improving the performance of vacuum towers, distillation equipment, gas absorbers, flash drums, knock-out drums, scrubbers, and evaporators through the use of wire mesh entrainment separators and mist eliminators.

2 Solvent Extraction

A bulletin presenting principles of operation, typical applications and engineering data on standard laboratory and pilot plant York-Scheibel multi-stage extraction units which are highly efficient and practical for both simple counter current and fractional liquid extraction.

3 "Performance of Wire Mesh DeMisters" by: Otto H. York

Reprint of paper presented before A.I.Ch.E. describing the performance of wire mesh demisters. Presents case histories from the chemical, petroleum and petrochemical industries which show how wire mesh demisters, are being used to eliminate overhead losses and increase the quality of the overhead product, while permitting operation at vapor velocities which would otherwise be excessive.

4 Bulletin 19 "Yorkmesh Demisters in Sugar Evaporators"

Yorkmesh DeMisters in sugar evaporators save money by preventing sugar loss by entrainment carryover, and at the same time produce condensate of high purity suitable for process use or as boiler feedwater.

Installation details are illustrated, and engineering data are presented. Yorkmesh DeMisters also reduce maintenance and cleaning costs. While use in sugar evaporators is described, similar savings and benefits will be obtained in evaporators handling chemical solutions, etc.

5 Case Study 1001 "Entrainment Elimination Gives 31% Capacity Increase"

Detail case study showing how the installation of a stainless steel wire mesh section in an asphalt vacuum still at the Sinclair, Wyoming refinery of Sinclair Refining Company stopped entrainment and increased capacity. The account describes how the wire mesh installation was made and includes complete data on operating conditions before and after installation.

6 Case Study 1002 "Catalyst Poisoning Reduced 90%"

Case Study 1002 shows how the installation of a wire mesh demister pad in a vacuum tower supplying a substantial portion of the charge stock to several cracking units at General Petroleum Corp.'s Torrence refinery resulted in a 90% reduction in catalyst poisoning. Also included is a detailed description of tower operating conditions, the method of wiremesh installation and a table comparing metals content before and after the installation was made.

7 Case Study 1003 "Yorkmesh DeMister Eliminates Caustic Spray"

This case story contains reproductions of the initial correspondence, recommendations, order and service history exchanged through the mails by Otto H. York Co., Inc. and process engineers at a chemical plant troubled with a serious air pollution problem caused by the fine caustic spray rising from the open top of a scrubbing tower when operated at a steam rate of 3000#/hr. The correspondence reveals how a 6" demister section recommended by York completely eliminated the objectionable caustic spray.

8 Case Study 1004 "Vacuum Tower Capacity Increased 35%"

This case history shows how the installation of stainless steel wire mesh sections in two vacuum asphalt towers at Marcus Hook, Pa., refinery of Sinclair Refining Co. increased feed capacity 30-35% while maintaining gas-oil quality. Included in the account is a complete description of vacuum tower operation, a table of operating conditions and a comparison of operations before and after the demister installation. Also included is a diagram of the vacuum tower indicating the position of the wire mesh filter and the relative positions of the internal elements.

9 Case Studies 1005 and 1006 "Yorkmesh DeMisters Cut Compressor Maintenance"

Two case history accounts tell, respectively, how a monel wire mesh demister was installed in the compressor suction drum of a deasphalting unit at a Gulf Coast Refinery to reduce high maintenance costs on propane compressors; and how installation of a monel wire mesh demister pad in the compressor suction line of the catalytic cracking unit at a Midwest Refinery completely stopped the excessive maintenance which resulted from dilution of valve lubricants by liquids entrained in the gas stream.

10 "Calculation of Liquid-Liquid Extraction Processes" by: Edward G. Scheibel,

Twelve page illustrated booklet with diagrams, charts and graphs, primarily concerned with coordinating existing information and presenting the simplest and most direct methods for the study and design of liquid-liquid extraction processes.

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Unusual flexibility. (304A)

. . . A novel service board at Armour Laboratories new pilot plant, Kankakee, Ill., has six available panels providing connections for air, water, steam, vacuum and refrigeration.—*Armour Laboratories, Chicago, Ill.*

Still, Vacuum

For simple, continuous operation. (304B)

. . . Large capacity on a continuous basis can be handled by the new Rota-Film high-vacuum still. A sanitary, self-cleaning packaged unit, this falling-film still operates easily under controlled or variable conditions. Stills come as 12-in. unit packaged for pilot plant operation, or with 36, 48, 60 or 96-in. dia. evaporative surface.—*Arthur F. Smith Co., Rochester, N. Y.*

Tablet Coater

Applies dry. (304C)

. . . While it may be desirable to coat many tablets, the conventional pan-coating methods may sometimes be unsuitable because the moisture damages the active ingredients. Now, a new machine compresses dry powder around the core tablet.—*F. J. Stokes Machine Co., Philadelphia, Pa.*

Tanks, Chemical

Molded from single, unbreakable piece of plastic. (304D)

. . . A new line of chemical tanks are molded in one continuous piece from non-breakable polyethylene. Seams, welds and joints are eliminated from the tank structure. Danger of leaks and corrosion is reduced. —*Delaware Barrel & Drum Co., Wilmington, Del.*

Tray, Distillation

Modified to heat or cool throughout. (304E)

. . . Temperature of gas or vapor and liquid flowing through columns can be controlled more uniformly, precisely with a modified version of Shell Development Co.'s Turbogrid distillation tray. By circulating heat transfer medium through these tubes, necessary heat can be added or removed from specific trays as required without dilution of the process stream.—*Shell Development Corp., Emeryville, Calif.*

Welder, Paper

Paper webs joined without bulges. (304F)

. . . Webwelder machines makes one roll out of two narrow rolls without the trace of a bulge in the middle where the webs join. Unwinding at speeds of 500 ft. per min., the edges to be joined are beveled by rotary grinders.—*Dorr-Oliver, Inc., Stamford, Conn.*

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. . . Wire filter cloth with more than 200,000 openings per sq. in. is believed to be finer than any other woven wire cloth. Available in any weavable metal, any mesh.—*Unique Wire Weaving Co., Hillside, N. J.*

TECHNICAL LITERATURE

PROCESS EQUIPMENT

Absorbers.....For absorption of hydrogen chloride and other gases. Produce as much as 20 tons per day 22° Baume acid. Pneumatic automatic control. Complete information in Catalog Section No. S-7460.
304H National Carbon Co.

Accumulators.....B&W Accumulators are manufactured in the range from 500 to 6000 psi or higher, with capacities from 5 gallons to 10,000 gallons. Company makes detailed information available upon request.
225a *Babcock & Wilcox Co.

Air Cleaners, Electronic.....Booklet describes the Precipitron air cleaner for commercial & industrial applications. Complete with pictures, drawings & specifications. For further details, request Booklet B-1425.
304I Westinghouse Sturtevant Div.

Blast Cleaning Equipment.....New 8 p. reference describes Hydro-Finish liquid blast cleaning equipment. Contains photographs, detailed drawings, dimensions, sizes and features of all models. Bulletin 1403.
304J Pangborn Corp.

Caps, Bubble.....Standard reference on bubble caps and risers contains complete specification information for hundreds of variations . . . the largest compilation of engineering data. Request Bulletin No. 22.
304K Pressed Steel Co.

Centrifugals.....Illustrated, 16 p. describes operation & features of: "Ter-Meer" continuous centrifugal (Type S); "Ter Meer" universal filtering centrifugal (Type HS); etc. Request Catalog No. C-55.
304L Baker Perkins.

Centrifugals.....When your process calls for liquid-solids separation by centrifugal force . . . you can do it more economically with the new Tolhurst Center-Slung centrifugal. Request Bulletin TC-14-55.
304M Tolhurst Centrifugals Div.

Centrifugals, Continuous.....Maxi-Flex centrifugals easily adjusted for maximum throughout . . . quality of filtrate and cake. Enables Maxi-Flex to give more speed and efficiency. Request Bulletin.
304N Tolhurst Centrifugals Div.

Centrifuges.....The Sharples Laboratory Super-Centrifuge develops the highest centrifugal force commercially available. For complete information on operation and applications, request Bulletin No. 1269.
304O Sharples Corp.

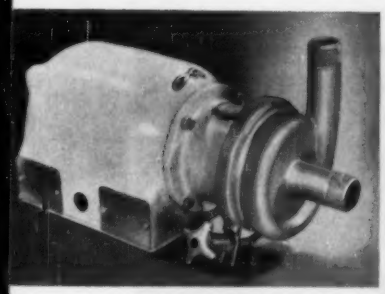
Centrifuges.....The Sharples DH-3 Nozljector is the centrifuge for your plant. It puts more horsepower, & all the horsepower where it belonges—into the centrifuge bowl. For details, request Bulletin No. 1276.
304P Sharples Corp.

Centrifuges.....Provides industry with 7 types of continuous centrifuges to handle materials ranging from 2 immiscible liquids to crystalline solids. Briefly & geographically describes full line in Bulletin No. 1259.
304Q Sharples Corp.

Centrifuges.....High speed dehydrating centrifuge offers precise external control of variations in flow rate, crystal size & slurry concentration & permits intermediate treatment of crystals. Bulletin No. 1257.
304R Sharples Corp.

Centrifuges.....Toxic, volatile, and odorous liquids can be centrifuged readily at high throughputs. The Sharples super-centrifuges put at your command the highest centrifugal force. Bulletin 1248.
304S Sharples Corp.

* From advertisement, this issue.

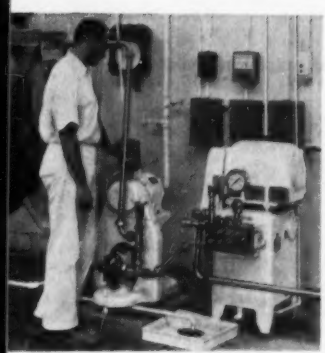


"Flexflo" Pumps. Complete line of centrifugals, in polished 316 stainless and unpolished finish. Sizes to 120,000 lb./hr.; heads to 120 feet; ¾ to 10 h.p. WRITE FOR BULLETIN G-524.

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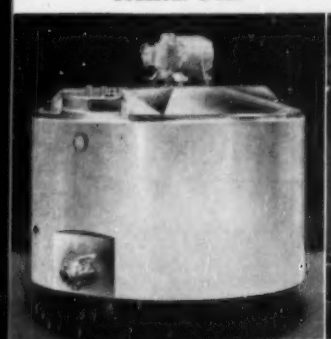
"Round Processors." Heavy-duty vats for zone control heating, cooling. Scraper blade and propeller agitators. Four models including vacuum and pressure processors. Sizes to 1000 gals. WRITE FOR BULLETIN G-512.

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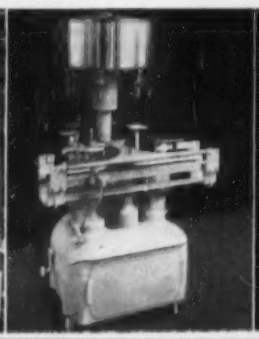
Liquids Filler. Handles round, square, rectangular bottles, jugs, jars, cans. Six filling valves and "clean bowl" tank are 316 stainless steel. Automatic or manual operation.

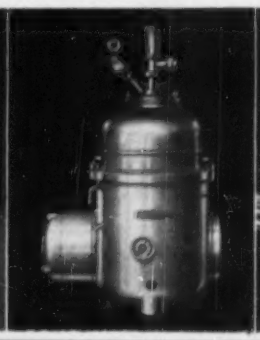
Westfalia Separators and Clarifiers. For warm separation to 11,000 lb. per hr.; warm standardizing or clarifying to 16,500; cold separation to 5500; warm or cold clarifying to 22,000. WRITE FOR BULLETIN F5504.

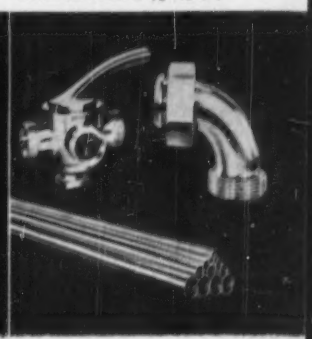
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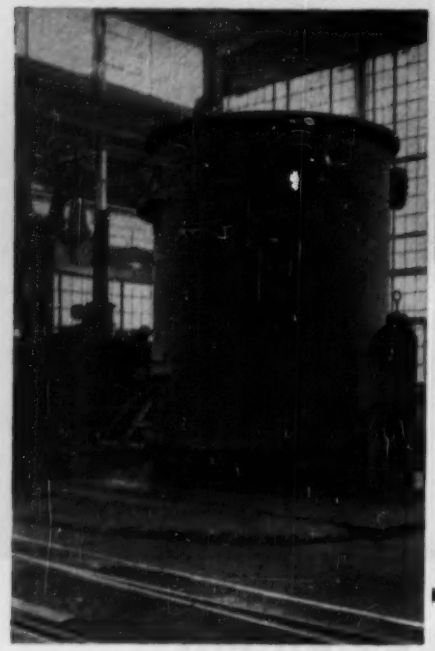






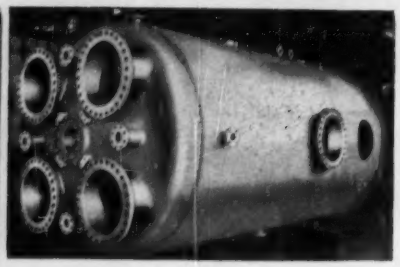






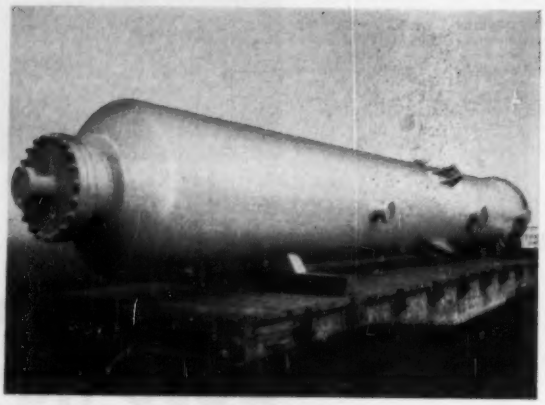


Rotating Copper Converter
13 feet dia. 30 feet long

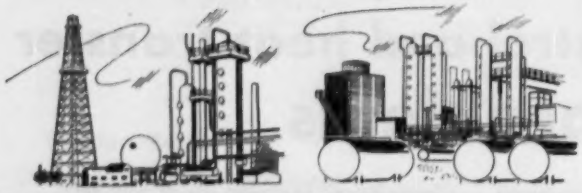


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Pressure Vessel Component on 35 ft. Horizontal Boring Mill



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7 feet Dia. — 50 feet long



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TECHNICAL LITERATURE

Centrifuges—

Cleaning, Air

Centrifuges.....12p. describes numerous features & advantages of product line: peeler centrifuges HZ; pusher centrifuges SZ; screenworm centrifuges KMZ; decanting centrifuges KVZ; etc. Bulletin S-225e.
307A Krauss-Maffei-Imperial.

Centrifuges.....Titan Superjector Centrifuge for continuous removal of solids from 1 or 2 liquids and for continuous concentration of solids by removal of liquid from slurries. For details, see Bulletin 930.
307B Pfaudler Co.

Chemical Equipment.....Corrosion proof chemical equipment engineered and constructed to your specific requirements. Each unit is custom engineered to give lasting service. For complete details, see Bulletin 11-U.
309 *Maurice A. Knight.

Chlorinators.....Describes the new F&P Figure 1050A Chlorinator . . . a vacuum-type solution-feed gas chlorinator for capacities from 0.1 lbs. of chlorine gas per 24 hrs. to 1000 lbs. per 24 hrs. Catalog 70-10.
307C Fischer & Porter Co.

Clarifiers & Thickeners.....Questions on design requirements of clarifiers & thickeners for a wide range of capacities & solids removal loads are answered in 16 p. illustrated book. Bulletin No. W-800B-S-6000B.
307D Infilco, Inc.

Classification Units.....Illustrated, 8 p. describes the historical development, physical characteristics, capacities and ranges of separation of newly designed classification unit. Request Bulletin No. 2503.
307E Dorr-Oliver, Inc.

Classifier & Dryer.....Majac power-driven air classifier & dryer classifies & dries solid materials simultaneously, fractionates particles with 99.9% efficiency, removes moisture content as high as 20%. Data.
307F Majac, Inc.

Classifiers.....All classifiers (Rake Type, Spiral, Hydro) are designed to efficiently separate fine particles in specific applications. For complete information on company's line, request Bulletin C5C-B.
307G Denver Equipment Co.

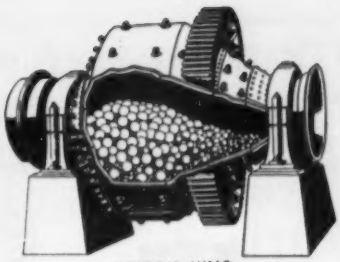
Classifiers, Air.....The Hardinge Gyrotor Classifier system, combined with a Hardinge grinding mill is an integrated grinding, classifying & product conveying system. Details in Bulletin No. AH-467-11.
307H Hardinge Co.

Cleaners, Air.....New high efficiency engine intake air cleaner meets the lower allowable intake resistance demanded with the use of turbochargers & pressure blowers for scavenging. Bulletin No. 160.
307I American Air Filter Co.

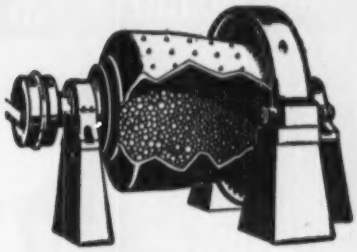
Cleaners, Air.....Company offers an improved self-charging, electrostatic air cleaner for heating, ventilating and air conditioning systems. Detailed information appears in "Heavy Duty Pliotron" folder S-5161.
307J Goodyear Tire & Rubber Co.

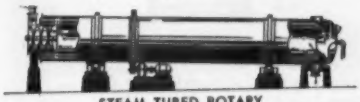
Cleaners, Floor.....Describes in detail outstanding features & advantages of Floormobile for suction cleaning (instead of sweeping) dust, dirt, lint, trash, etc., from large floor areas. Illustrated Bulletin No. 551.
307K Handling Devices Co.

Cleaning, Air.....Buffalo equipment includes air washers, hydraulic scrubbing towers, hydro-volute scrubbers, rotary multi-stage gas scrubbers, etc. Bulletins AP-225, AP-425, AP-525, 2181-B & 2424-F.
307L Buffalo Forge Co.

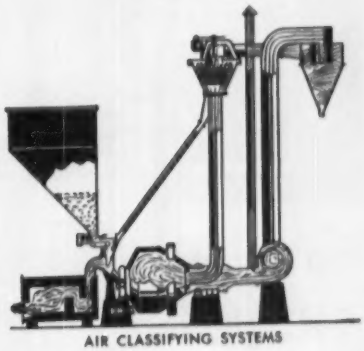

CONICAL MILLS

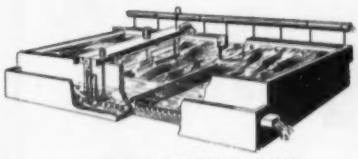

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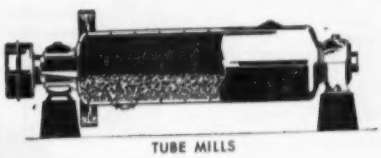

STEAM TUBED ROTARY DRYERS

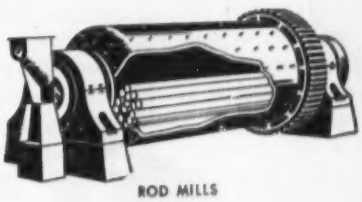

THICKENERS—CLARIFIERS

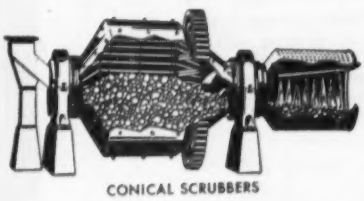

AIR CLASSIFYING SYSTEMS

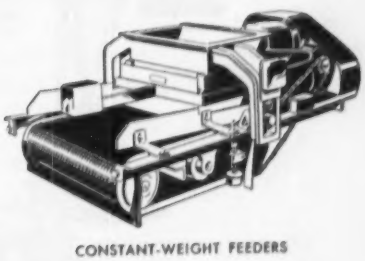

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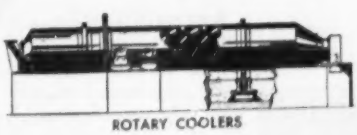

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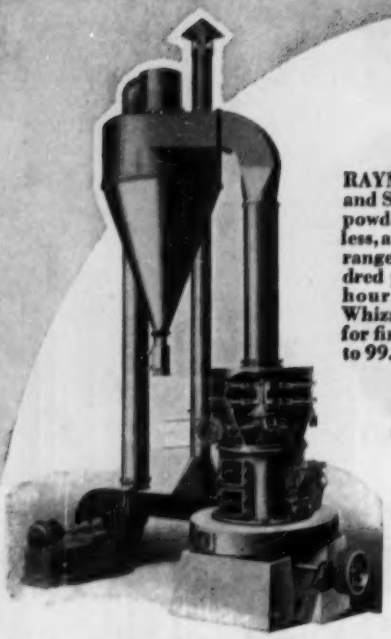
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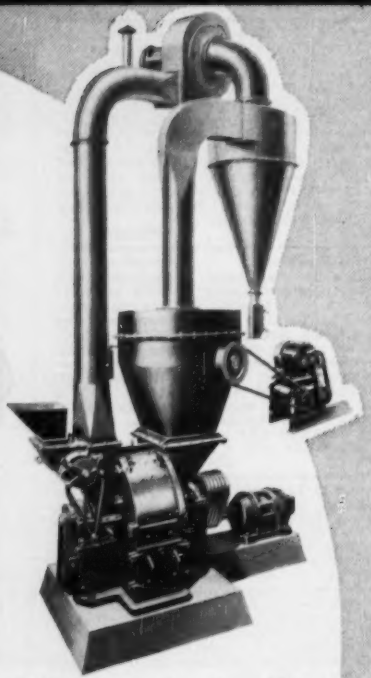
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Equipped with Whizzer Separator for finish grinding operations in handling medium and large capacities.

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Hammer type pulverizer with integral classifier to insure finger tip control of product fineness. Also often furnished with Flash Drying Accessories.



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With Flash Drying System for disintegrating soft materials and removing moisture for delivery of a fine, dry, free-flowing product.



RAYMOND Mechanical Air Separator with Double Whizzer for classifying finely ground material from mills, screens or bins.

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1956 INVENTORY

TECHNICAL LITERATURE

Cloth, Filter—
Cylinders, Gas

Cloth, Filter.....Literature reference, "Facts and Figures About Filter Cloth" contains actual samples and performance characteristics on Stanley corrosion-resistant filter cloth. Copies available on request.
324 W. W. Stanley Co.

Cloth, Filter.....If high operating temperatures are your problem . . . try NFM cloth made from Orlon acrylic fiber. Makes available detailed literature on its important values plus a product sample.
309A National Filter Media Corp.

Columns, Contact.....Company announces the development of a continuous contact column in which solids settle down through an upward flow of liquid. Details contained in a new leaflet, No. 07R8289.
309B Allis-Chalmers Mfg. Co.

Columns, Fractionating.....Give you maximum chemical stability, high resistance to thermal and physical shock; lets you see the fluids in process. For product information, request detailed Data Sheet.
309C Corning Glass Wks.

Crushers, Cone.....For the reduction crushing of ores, rock products & industrial minerals. The operation & design features of these Symons Cone Crushers are described in complete detail in Bulletin 247.
309D Nordberg Mfg. Co.

Crushers, Gyratory....."One-man, one-minute" product control, a feature of Allis-Chalmers primary, secondary & tertiary gyratory crushers, cuts setting changing time from hours to seconds. Request literature.
309E Allis-Chalmers Mfg. Co.

Crushers, Jaw.....Illustrated, 24 p. booklet offers complete information on company's line of jaw crushers. Built in eight sizes with capacities up to 300 tons per hour. Details available in Bulletin No. 1124.
309F Traylor Engrg. & Mfg. Co.

Crushers, Jaw.....Multi-layer frame construction makes Lippmann "Rock-Ram" a stronger, lighter weight, lower cost jaw crusher with a high productive capacity. Details of features in illustrated Bulletin No. 1111.
309G Lippmann Engrg. Wks.

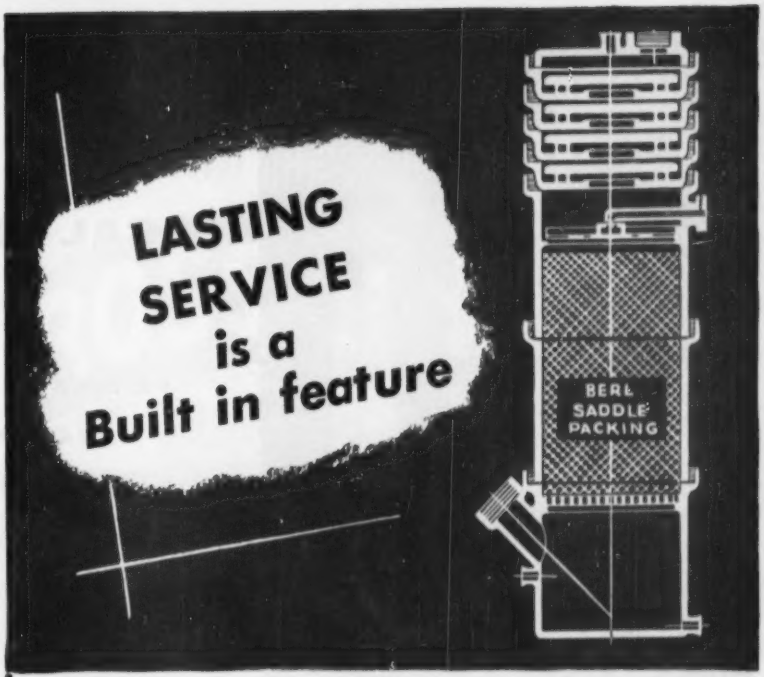
Crushers, Jaw.....Cast steel frame, manganese jaw & cheek plates. Large diameter shafts reduce shaft deflection & thus increase life of heavy-duty, oversize roller bearings in bumper. Bulletin No. C12-B12.
309H Denver Equipment Co.

Crushers, Toothed Roll.....New Booklet describes crusher line—tells how to get rid of obsolete manual crushing methods on miscellaneous chemicals ranging from wax-like material to very hard substances.
309I Franklin P. Miller & Son.

Cyclones, Liquid.....For all operations involving thickening, de-watering, classifying, densifying, clarifying, desludging & desliming of liquid-solid solutions. Illustrated Bulletin offers complete information.
309J Centrifugal & Mech. Industries.

Cylinders, Gas.....Hackney seamless or two-piece cylinders are made in all sizes . . . for all compressed gases. Cylinders are designed with low tare weight for easy handling & shipping. Complete details upon request.
309K Pressed Steel Tank Co.

Cylinders, Gas.....Safety & long life are prime considerations in the design of Harrisburg high pressure gas cylinders. Yet they are as light as sound engineering permits. For details, request literature.
309L Harrisburg Steel Corp.





Pipe, duct and fittings



Towers, absorbers, scrubbers



Separators, reactors, kettles, surge tanks

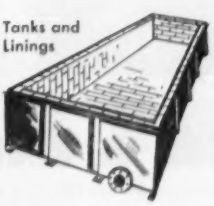
of Knight-Constructed CHEMICAL EQUIPMENT

From piping to complete plant, Knight can supply you with corrosion proof chemical equipment engineered and constructed to your specific requirements.

In each case, our engineering department first checks function and service conditions in order to select the most suitable materials. These may include Knight developed materials such as Knight-Ware, Permanite, Pyroflex, Sealon, or any others which are best suited to the particular job. Thus each unit is custom engineered to give lasting service under toughest corrosive conditions.

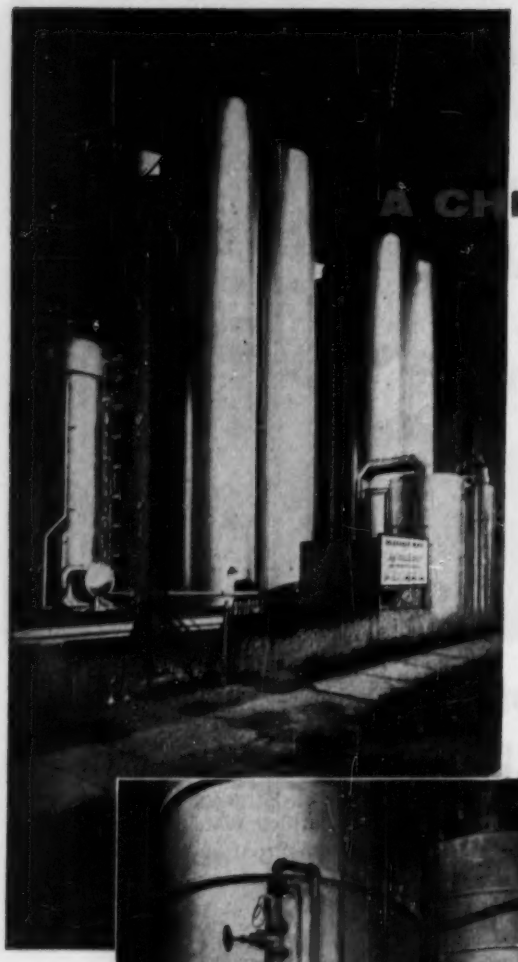
To make the package complete, Knight also supplies tower packings from the widest selection available, as well as special corrosion-proof cements and coatings.

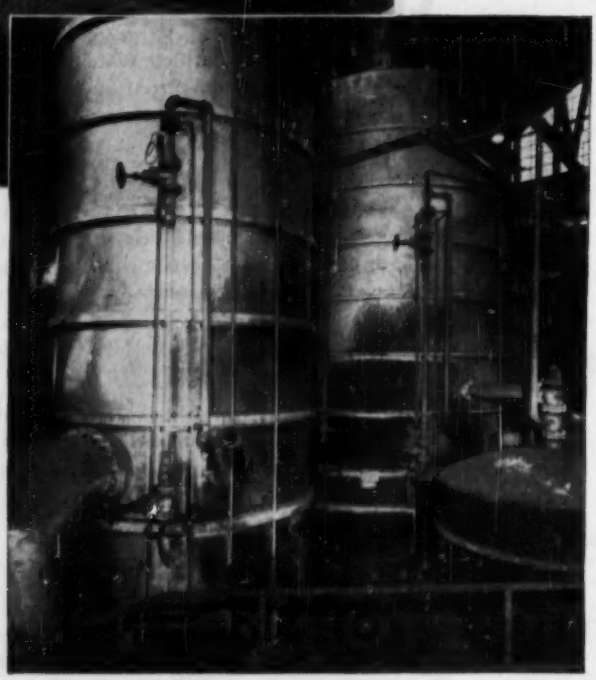
Tanks and Linings



For further information on Knight products and materials send for illustrated bulletin No. 11-U, Knight Chemical Equipment.

Maurice A. Knight 19 Kelly Ave., Akron 6, Ohio
Acid and Alkali-proof Chemical Equipment





A CHEMICAL PLANT NEEDS . . .

FILTERS

EVAPORATORS

CRYSTALLIZERS

PROCESSING TOWERS

PRESSURE VESSELS

FLAT BOTTOM TANKS

• Many welded steel plate structures are required at a chemical plant . . . all built to exacting standards. Rugged Conkey designed and engineered filters, evaporators and crystallizers are precision built in Chicago Bridge & Iron Company's four strategically located shops and erected by CB&I's experienced crews.

CB&I skilled craftsmen design, fabricate and erect processing equipment, pressure storage tanks and flat-bottom storage tanks that provide you with the best when your requirements are the greatest. When you plan welded steel plate structures, write our nearest office . . . we will be happy to serve you.

Top left: Eight 12-ft. diam. by 100-ft. carbon dioxide towers fabricated and erected by CB&I.

Left: Conkey all nickel construction Triple Effect Evaporators producing 50 per cent caustic liquor.

CHICAGO BRIDGE & IRON COMPANY

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

CONKEY EQUIPMENT

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San Francisco • Seattle • Tulsa

1956 INVENTORY

TECHNICAL LITERATURE

Deaerators—

Demisters

Deaerators.....Covers special features incorporated in latest jet atomizing deaerator development & emphasizes operational advantages to be gained from corrosion-resistant equipment of this type. Bulletin No. 102.
311A L. A. Water Softener Co.

Dealkizers.....New dealkalizers utilize the ion exchange principles of salt splitting as an effective means of reducing alkalinity in boiler feed and process water. Complete details in Publication No. 4567.
311B Cochrane Corp.

Dehydrators.....Solas Dehydrator continuously dries compressed air, carbon monoxide, carbon dioxide, hydrogen, oxygen, gaseous hydrocarbons and inert gases. Contains full information in Bulletin No. 112.
311C Solas Corp. of America.

Dehydrators.....Compressed air & gas dehydrators, either manually operated or fully automatic up to pressures of 1000 psig are manufactured to customers' performance specifications. Request Bulletin No. R-11.
311D Desomatic Products.

Dehydrators, Vacuum.....Because of its flexibility, the continuous Chain Belt Vacuum Dehydrator can be adapted to the drying of many products such as chemicals & pharmaceuticals. Request Buls. Nos. 55-126 & 55-127.
311E Chain Belt Co.

Demineralizers.....High purity results, compact design & low operating costs makes marine demineralizers ideal method for treating boiler feed water on board naval working vessels, barges, etc. Tech. Bulletin Sheet 015.
311F Penfield Mfg. Co.

Demineralizers.....Available in two-bed, three-bed, four-bed and mixed bed units, of manual and automatic designs, and for any capacity. For complete information, request company's Bulletin No. 5800-B.
311G Cochrane Corp.

Demineralizers.....Produce chemically pure water for laboratory or small industry quickly, simply, economically with Kutlirlabs "Chemi-Filter." For complete production information, request illustrated Bulletin No. B-173.
311H Kutlir Labs.

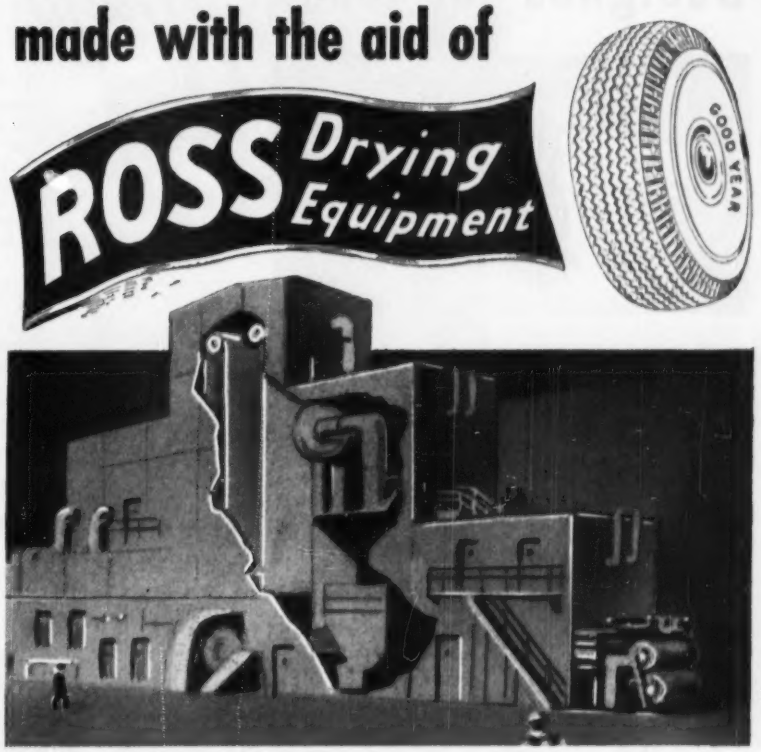
Demineralizers.....Builds complete water treating plants, maintaining a large, diversified engineering staff to make thorough process analyses and design exactly the equipment needed. Bulletin 200 on request.
311I Industrial Filter & Pump.

Demineralizers, Water Treatment..... Standardized Ilico-Way "Package-Unit" De-Ionizers are completely put together at the factory. Details of compact, efficient, time-proved units in Bulletin PK-154.
311J Illinois Water Treatment Co.

Demisters.....Illustrated Brochure covers "ACS" line of demisters. Includes: What a demister is; how it works; why it is used; what demister materials are used; where a demister is used; how a demister performs; etc.
311K American Copper Sponge Co.

→ Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

How TIRE-MAKING HISTORY was made with the aid of



BUILT TO TEMPER THE FAMOUS GOODYEAR 3-T TIRE CORD

The recent development of the triple action tempering process involving Tension, Temperature and Time, presented an entirely new tire cord drying problem. Cooperating with Goodyear engineers, ROSS designed and built this gigantic machine to maintain the 3-T's. It is more than 150 feet in length and stands six stories high. After stretching and dipping with WALDRON mechanical equipment, the cord is zone dried under the tremendous tension required for this history making 3-T process.

It is engineering achievements like this that stamp ROSS as the leader in drying, baking and treating equipment.

• • •

ROSS research and engineering have been responsible for many new developments in products and processes in all major industries:—paper, textiles, plastics, rubber, glass, etc. Write for our new illustrated Bulletin No. 54 showing ROSS installations in major industries.

J. O. ROSS ENGINEERING

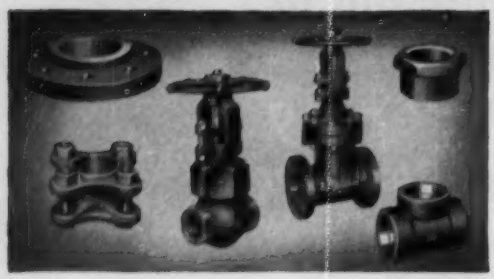
CORPORATION

***Main Office:* 444 MADISON AVE., NEW YORK 22, N. Y.**

Atlanta • Boston • Chicago • Detroit • Los Angeles • Seattle

ROSS ENGINEERING OF CANADA, LIMITED, MONTREAL, CANADA
CARRIER-ROSS ENGINEERING COMPANY, LIMITED, LONDON, ENGLAND

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Drop forged from carbon and alloy steels, Vogt valves, fittings and flanges will safely handle liquids and gases at high pressures and high temperatures in power plants, chemical plants, petroleum refineries, etc.
The complete line includes flanged, screwed and socket weld end globe, gate and check valves—ells, tees, and crosses—couplings—bushings—plugs—unions—flanges and flange unions—and welding heads.





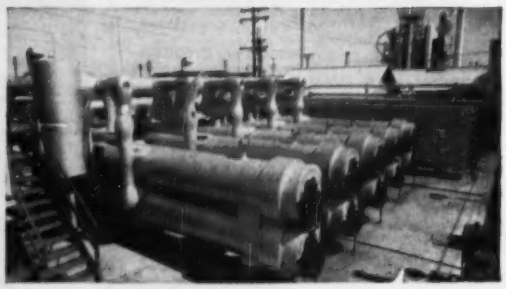
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Vogt steam generators are designed to give maximum rating in a minimum of space, with high efficiency and low maintenance expense. Bent tube types and straight tube, forged steel sectional header types to burn solid, liquid or gaseous fuels meet every power, process or heating requirement.



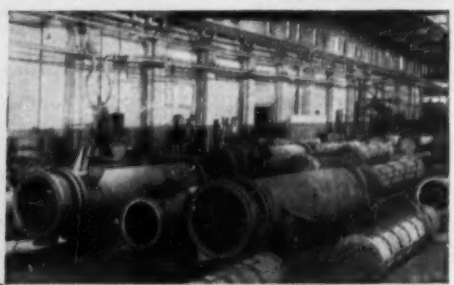
PROCESS EQUIPMENT FOR EVERY SERVICE

Vogt constructs process equipment in wide variety to all Codes. Stills and towers, oil chillers, crystallizers, heat exchangers, molding machines, etc., serve in the manufacture of oils, greases, 100 octane gasoline, synthetic rubber, chemicals and related products around the world.



SPECIAL MATERIALS COMBAT CORROSION AND PRODUCT CONTAMINATION

Our modern shops produce a wide variety of equipment from special metals and alloys to fight corrosion and product discoloration or contamination. Fabrication procedures insure that corrosion resistant properties of welds will match that of the materials used to construct the equipment.









MORE REFRIGERATION TONNAGE AT LESS COST

More than 70 years of engineering and manufacturing experience is incorporated in Vogt refrigerating and ice making equipment. Absorption Systems, Compression Systems, and Tube-Ice Machines in a wide range of capacities serve industrial and processing plants, and institutions, here and abroad.

Vogt

PRODUCTS

FOR REFINERIES, CHEMICAL PLANTS POWER PLANTS AND PROCESS INDUSTRIES

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LOUISVILLE 10, KY.

BRANCH OFFICES: New York, Philadelphia, Chicago, Cleveland St. Louis, Dallas, Charleston, W. Va.

1956 INVENTORY

TECHNICAL LITERATURE

Demisters—

Dispersers, Sub-Micron

Demisters.....“Yorkmesh Demisters in Sugar Evaporators” describes the prevention of sugar loss by entrainment carryover. Contains installation details & engineering data. Bulletin 19.
303d *Otto H. York Co.

Demisters.....Company announces the availability of a case study showing how installation of a wire mesh demister pad in a vacuum tower resulted in 90% reduction in catalyst poisoning. Case #1002.
303f *Otto H. York Co.

Demisters.....Valuable case study, “Yorkmesh DeMister Eliminates Caustic Spray” contains reproductions of initial correspondence, recommendations, order & service history. Request Case #1003.
303g *Otto H. York Co.

Demisters.....Case study shows how the installation of stainless steel wire mesh sections in two vacuum asphalt towers increased feed capacity 30-35% while maintaining gas oil quality. Case study 1004.
303h *Otto H. York Co.

Demisters.....Tells how a monel wire mesh demister was installed in a compressor suction drum of a deasphalting unit to reduce high maintenance costs on propane compressors. Case studies 1005 & 1006.
303i *Otto H. York Co.

Demisters.....Bulletin describes the clean separation between liquid & vapor in all types of process vessels by means of Yorkmesh DeMisters. Covers construction types, applications, engineering data, etc.
303a *Otto H. York Co.

Demisters.....“Performance of Wire Mesh DeMisters” presents case histories which show how wire mesh demisters are being used to eliminate overhead losses and increase the quality of the overhead product.
303e *Otto H. York Co.

Demisters.....Yorkmesh Demisters improve process vessel performance by effecting clean separation of liquid from vapor. Request a complete list of the many case histories available and Bulletin No. 17.
313A Otto H. York Co.

Discs, Filter.....Illustrated bulletin, “Glass Fiber Filter Discs,” describes filter discs and gives the shapes, fiber diameters, disc diameters, disc thicknesses and disc densities available. 4 p. Literature.
313B Friedrich & Dimmock.

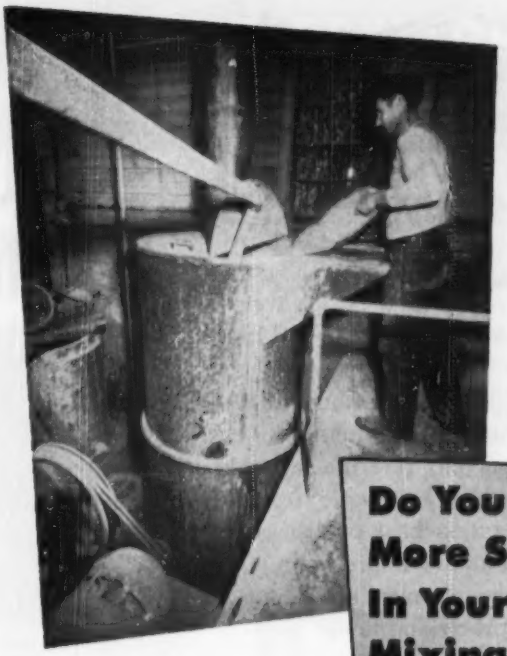
Discs, Tank Car.....New Tank Car Disc by BS&B meets the demand for a serviceable disc that will not corrode or fatigue where the car is in transit. Model TC prevents unnecessary product loss. Request more details.
313C Black, Sivalls & Bryson.

Disintegrators.....Illustrated reference describes Rietz Disintegrators for the chemical process industries. Includes a cut-away view of a Rietz Disintegrator model, features, specifications, etc. Bulletin 501.
313D Rietz Mfg. Co.

Disintegrators.....RI Series Disintegrators are available in stainless or carbon steel as standard items, or in other necessary metals on special order. A new Rietz Bulletin, No. R-507, is available on request.
313E Rietz Mfg. Co.

Dispersers, Sub-Micron.....Profusely illustrated booklet describes the Gaulin Sub-Micron Disperser . . . for pigment dispersions. Complete details of features, construction, operation & specifications. Bulletin SMD-55.
313F Manton-Gaulin Mfg. Co.

* From advertisement, this issue.



Charging the Abbé Dispersall Mixer described here

Do You Want More Speed In Your Mixing Cycle?

. . . then Investigate the Abbé Dispersall Mixer

Here's what a user in the ceramic field has to say about fast mixing cycles:

"We mix a 5000-lb. charge of air-floated clay and other ingredients in a total of 60 minutes—35 minutes to charge, and 25 minutes to mix. Our experience has been that a similar amount of slip with the standard equipment used in the industry would require several blunges for the same amount of ingredients. Before installing the Abbé Dispersall Mixer, our blunging cycle was a minimum of 4 hours per mix."

FOR MOST FLUID MIXES AND PASTES

. . . the Abbé Dispersall Mixer gives you power and speed, plus the tremendous advantage of easy cleaning, which readily allows shifting from one color or formulation to another. Tooth pastes, creams, ointments, latex and other paints, inks, colors, pharmaceuticals . . these are just a few of the products that are mixed and dispersed better and faster in the Abbé Dispersall Mixer in a ONE-stage operation

WRITE FOR CATALOG 78

ABBÉ ENGINEERING COMPANY

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Today Proctor has hundreds of successful installations of continuous drying systems. These profit-making installations are at work in all branches of the process industries—heavy chemicals, pharmaceuticals, plastics, food, leather, synthetic textiles, synthetic rubber, and a host of others. In each case, the equipment is precision engineered to meet a specific need and dovetail into the complete processing line.



Proctor single conveyor dryer with rolling extruder feed in operation at National Lead Company, Philadelphia, Pa. Wet material in a paste-like condition is fed into the hopper of the rolling extruder feed for conversion into small extrusions which are well suited to continuous conveyor drying.



Proctor single conveyor dryer in operation at Nuodex Products Co., Incorporated, Elizabeth, N.J. Material from preliminary processing is deposited into the hopper of the Proctor oscillating feed for uniform distribution across the full width of the dryer conveyor.



Proctor two-stage single conveyor dryer for yeast, in operation at National Yeast Corporation, Belleville, N.J. An extruder deposits yeast into hopper of a Proctor oscillating feed which distributes extrusions in a bed of uniform depth across the width of the dryer conveyor.



Proctor Continuous Drying Range in operation in a plant of one of the largest cereal manufacturers . . . one of many used in this manufacturer's plants.

Typical materials currently being dried in Proctor continuous conveyor systems:

Starch	Magnesium Carbonate	Metallic Stearates
Titanium Dioxide	Lead Arsenate	Iron Oxides
Sulfa Drugs	Synthetic Fibres	Cereals
Calcium Carbonate	Rubber Chemicals	Silica Jel
Urea Formaldehyde Plastic	Chrome Yellow	Yeast
Clay	Ore Briquettes	Synthetic resins
White Lead	Gelatin	Synthetic rubber
Finished Lithopone	Glue	and many other chemical and related products.
Soy Bean Protein	Catalysts	

PROCTOR DRYING EQUIPMENT FOR CHEMICAL AND PROCESS INDUSTRIES

Tray Dryers — Pre-forming Feeds
Truck Dryers — Spray Dryers

Proctor **PROCTOR & SCHWARTZ, INC.** Philadelphia 20, Pa.
Manufacturers of Industrial Drying Equipment and Textile Machinery

TECHNICAL LITERATURE

Dissociators, Ammonia—

Dryers

Dissociators, Ammonia.....Illustrated, 12 p. offers valuable information: typical uses of dissociated ammonia; description of dissociator economy; advantages; sizes-capacities; users of equipment; etc. Bulletin B-52.
315A Drever Co.

Distillation Apparatus ..... Build your Unitized Distillation Assembly out of standard, precision-made, interchangeable units ordered directly from stock. For further information, request Bulletin FS-256.
315B Fisher Scientific Co.

Distillation Processing Units ..... The Rota-Film Still, a new distillation processing unit, features a sanitary, self-cleaning packaged unit capable of handling a large capacity on a continuous basis. 16 p. booklet.
315C Arthur F. Smith Co.

Dragscrapers.....New catalog gives full details and specifications on Dragscrapers Machines. Covers standard installations, Rapid Shifting Dragscrapers, track cable machines and tower excavators. Catalog A.
315D Sauerman Bros.

Dryers.....Describes & illustrates the packaged Turbo-Dryer for small production, pilot plant & experimental drying operations. Includes outstanding advantages & features, construction data, etc. Bulletin 2504.
315E Wyssmont Co.

Dryers.....Heavy-duty rotary unit with furnace, burner, breeching and air-handling system, used for ammoniated gradular fertilizers and other chemicals. Request complete information and literature.
326a *Edw. Renneburg & Sons, Co.

Dryers.....Available in several types: direct heat, indirect heat, and steam tube. Let Deco engineers help solve your drying problem—no dryer problem too small or too large. Details in Bulletin No. D4-B2.
315F Denver Equipment Co.

Dryers.....For solids drying . . . mechanical McNally Dryclone separates at low cost. Here is high drying efficiency, with drying costs held to a few cents per ton. Request descriptive drying Bulletins.
315G McNally Pittsburg Mfg. Corp.

Dryers.....Safety, speed, economy, and the ability to hold close drying specifications are particularly valued features of new drying process. For complete information on the Parry Dryer, request product bulletin.
296 *Silver Engrg. Wks.

Dryers.....Full line pressure reactivation, purging eliminated, longer adsorbent life, no moving parts, simple design, all air or gas entering dried without loss. For complete details see Bulletin 16.0.018.
315H J. F. Pritchard & Co.

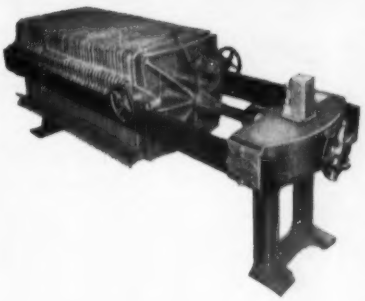
Dryers.....Lectro-dryers can dry air & gases in volume to dewpoints below —100° F—can, drop relative humidity lower than 10%. Booklet describes machines & how various industries use them to gain efficiency.
315I Pittsburgh Lectrodryer Corp.

Dryers ..... Ruggles-Coles indirect-fired dryers and heaters; dry without contamination from combustion gases, regardless of fuel; collect vapors at high concentration; etc. Data in Bulletin No. AH-438-11.
315J Hardinge Co.

Dryers.....Help solve problems of drying air or other gases. Offer valuable advantages: simplicity of operation & maintenance; low installation cost & minimum maintenance expense. Details in Bulletin D-27.
315K C. M. Kemp Mfg. Co.

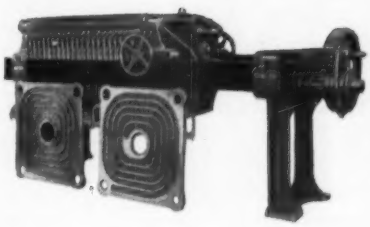
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SHRIVER DEVELOPMENTS
Improve Unit Operations



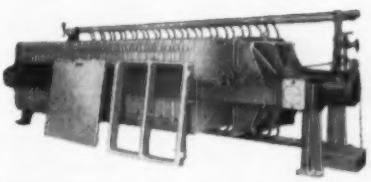
Filter Presses

The most versatile of all filters in range of types and capacities, to meet practically all conditions of operating pressure and temperature; required clarity and flow rate of filtrate; degree of filter cake dryness; ability to extract or wash cake; ability to use any textile, metal or paper filter media. Catalog 55.



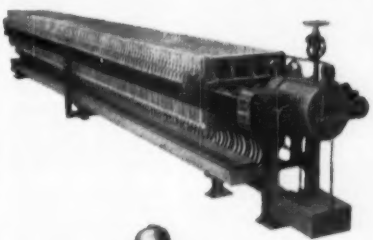
Continuous Thickener

Uses—Washing slurry to remove impurities, especially from slow-settling materials, saving considerable time and equipment. • Thickening prior to filtration. • Thickening instead of filtration. • Decantation involving "fines." "A lot of thickening in a small space." Bulletin 122.



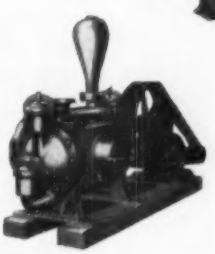
Chamber Type Reactor

Polymerizes plastic resins at controlled rate of heating and cooling to produce multiple slabs of finished product of any desired size, 12" to 56" square, from 1" to 5" thick. Bulletin 142.



Wax Molding Press

Cools and molds paraffin or natural wax, or other substances, into multiple cakes of uniform size, weight and appearance, without shrinkage. Bulletin 127.



Diaphragm Pump

Cuts operating and maintenance costs in handling corrosive, abrasive, viscous, heavy or delicate fluids. Positive, double reciprocal piston pump requiring no packings (no leakage), easy to clean. Liquid pumping heads made of any required resistant material. Capacities to 100 gpm. Bulletin 137A.

Write for interesting literature

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. . . no other filtering medium compares with

ANTHRAFILT

Trade Mark Reg. U. S. Pat. Off.



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Years of efficient and economical use in every type of filter plant has made Anthrafilt the standard of excellence in the filtering medium field.

ANTHRAFILT is made from selected Pennsylvania Anthracite, low in ash, high in anthraxion, low in friability, correctly shaped and sized for best overall results in filtration.

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for more efficient and economical filtration

ANTHRAFILT provides greater capacity . . . longer filter runs . . . cleaner washings at lower cost . . . removes entrained turbidity from industrial process solutions or wastes.

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Erie, Pa.

Representing
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

Process Equipment

TECHNICAL LITERATURE

Dryers, Air— Evaporators, Falling Film

Dryers, Air.....Fully automatic, reactivates every 12 hours (or 22,800 cubic feet of air) and there is practically no pressure drop from the entering pressure. For details, request Bulletin D-100.
316A C. M. Kemp Mfg. Co.

Dryers, Closed Circuit..... The advantages and practical features of closed circuit drying using an inert gas for removal and recovery of an organic solvent are covered in a 4 p. illustrated reprint.
316B Wyssmont Co.

Dryers, Rotary.....Deliver top production, exacting performance, greater profits. Tells how Standard-Hersey has aided manufacturers throughout the world in solving their dryer problems in illustrated 12 p. Bulletin.
316C Standard Steel Corp.

Dryers & Dewaterers.....High capacity units designed to filter slurries with solids concentration of 20% and greater, with fast settling and rapid cake formation characteristics. For details, see product bulletin.
317-20a *Elmco Corp.

Dryers, Rotary.....The Davenport rotary hot air dryer is of stainless steel construction. Dryer is installed in one of the large processing plants, drying wheat glutten. For complete details, request Catalog A.
316D Davenport Mach. & Foundry.

Dryers, Rotary Vacuum..... Company announces the availability of literature on their vacuum drying equipment (Catalog No. 720) and a new reference covering Stokes Laboratory Facilities (Bulletin No. 640).
316E F. J. Stokes Mach. Co.

Dryers, Spray.....Announces the availability of a fully illustrated reference describing company's line of spray dryers . . . with horizontal air suspension. Complete details of features and construction. 4 p.
316F Henszey Co.

Dryers, Spray....."Spray Drying with Buflovak" explains flexibility, design features and capacities of the five standard sizes of spray dryers. Vertical and horizontal dimensional requirements diagrammed. 12 p.
316G Blaw-Knox Co.

Dryers, Spray.....Features: high recovery of solids, low initial cost, low cost of operations, easy to clean, low maintenance cost, & controlled characteristics of the dry product. Details in Bulletin 373.
316H Blaw-Knox Co.

Dryers, Spray.....Special Nerco-Niro designs can be supplied for abrasion resistance and corrosion resistance, for coagulating materials, for fine or coarse particles, high or low bulk density. Bulletins 226 & 230.
316I Nichols Engrg. & Rsch. Corp.

Dryers, Steam Tube.....Ruggles-Coles steam tube dryers have been supplied fabrication of alloys to provide protection against corrosion & contamination. All fabrication is to code requirements. Bulletin No. 16-D-11.
316J Hardinge Co.

Dryers, Vacuum.....Faster, uniform heat transfer, plus rapid vapor removal . . . means today's best in vacuum drying with the Patterson Conaform. For complete product data, request new detailed Bulletin.
316K Patterson Foundry & Mach.

Drying Equipment.....To improve your product call on Proctor & Schwartz who not only manufacture drying equipment, but have the know-how to help you in materials handling problems. Request Bulletin 390.
316L Proctor & Schwartz.

Drying Equipment.....Ross drying equipment maintains the 3-T's . . . Tension, Temperature and Time. Ross installations in major industries are illustrated in Bulletin No. 54. Copies available upon request.
311 *J. O. Ross Engrg. Corp.

Drying, Gases.....The Hydryer dries all gas without loss, purging is eliminated, etc. Bulletin tells you the many ways the Pritchard Hydryers are used in the chemical industry. Request your copy, No. 16.0.081.
316M J. F. Pritchard & Co.

Drying Systems, Flash.....Systems offer means for handling materials in which drying is combined with pulverizing, or with mild disintegration, or followed by cooling & conveying product to storage. Catalog 82.
316N Raymond Div.

Duct Systems.....Boltaron 6200 Type I PVC has outstanding resistance to corrosive gases & liquids, alkalies & acids. Boltaron 7200 PVC is available when conditions permit the use of a Type II PVC. Bulletin 4B.
316O H. N. Hartwell & Son.

Eductors, Water Jet.....New reference adds to previously published data on SK water jet eductors. Includes data on application, construction, operation, installation, and sizes available. Bulletin Supplement No. 2M.
316P Schutte & Koerting Co.

Ejectors.....The Penberthy 63A Ejector eliminates boiling or handling of slurry by operator. Penberthy products are simplifying operations and saving time and money. Request complete information.
316Q Penberthy Injector Co.

Ejectors.....Elliott's 5-stage ejectors are applied when absolute pressures ranging from .612 in. (0.3mm) to about .003 in. (0.075mm) mercury are required. For details on complete line, request Bulletins.
316R Elliott Co.

Ejectors, Steam Jet.....The steam jet ejector is the ultimate in mechanical simplicity, consisting of only 3 basic parts—a steam nozzle, a suction chamber & a venturi-shaped diffuser. Bulletin 9013A.
316S Ingersoll-Rand Co.

Ejectors, Steam-Jet.....Presents a 60 p. "Steam-Jet Ejector Application Handbook" for selection of single and two-stage stock ejectors for general vacuum service. Photos, tables, graphs, etc. Bulletin W-205-E21.
316T Worthington Corp.

Elbows, Reducing.....Offer important advantages in both piping design & piping cost. Need only 2 welds instead of the 3 required by a standard elbow & a reducer. For full details, request Catalog No. 54.
316U Midwest Piping Co.

Evaporation & Spray Drying.....Swenson can help you solve evaporation & spray drying problems. You benefit through experience gained in over 66 years of practical application. Catalog tells the full story.
316V Swenson Evaporator Co.

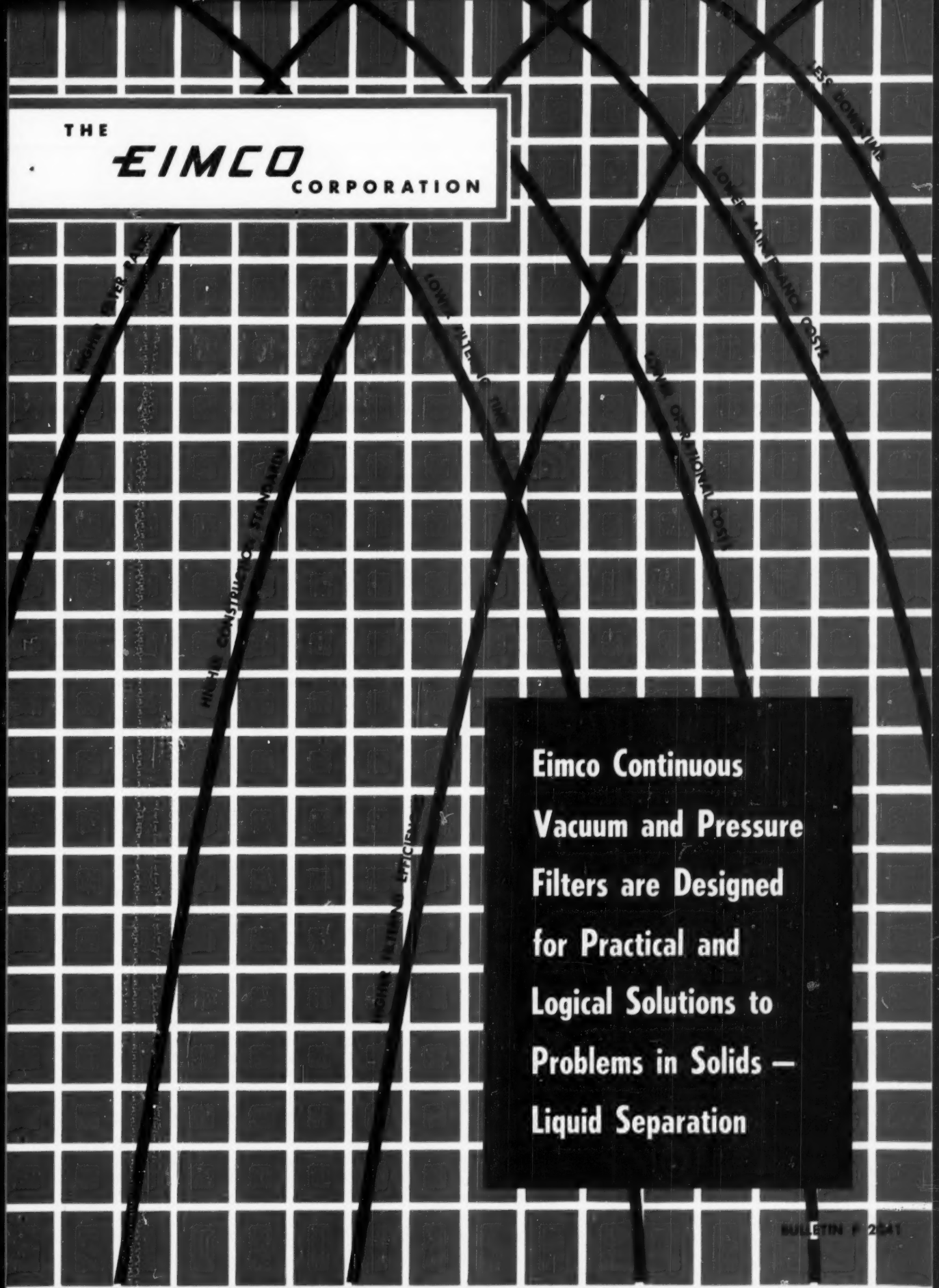
Evaporator-Strippers.....For solvent recovery . . . are designed to separate volatile & non-volatile components of a liquid mixture—continuously & with high efficiency. Request bulletin, "Process Equipment."
322 *Artisan Metal Products.

Evaporators.....Complete Swenson Catalogue contains full information on long-tube vertical evaporator, spray dryers, crystallizers, forced circulation evaporators & recovery equipment for pulp mills.
316W Swenson Evaporator Co.

Evaporators, Falling Film.....Accurately manufactured to rigid standards to assure the proper liquid distribution so important in the evaporating process. Construction and features contained in Bulletin No. 250.
316X Whitlock Mfg. Co.

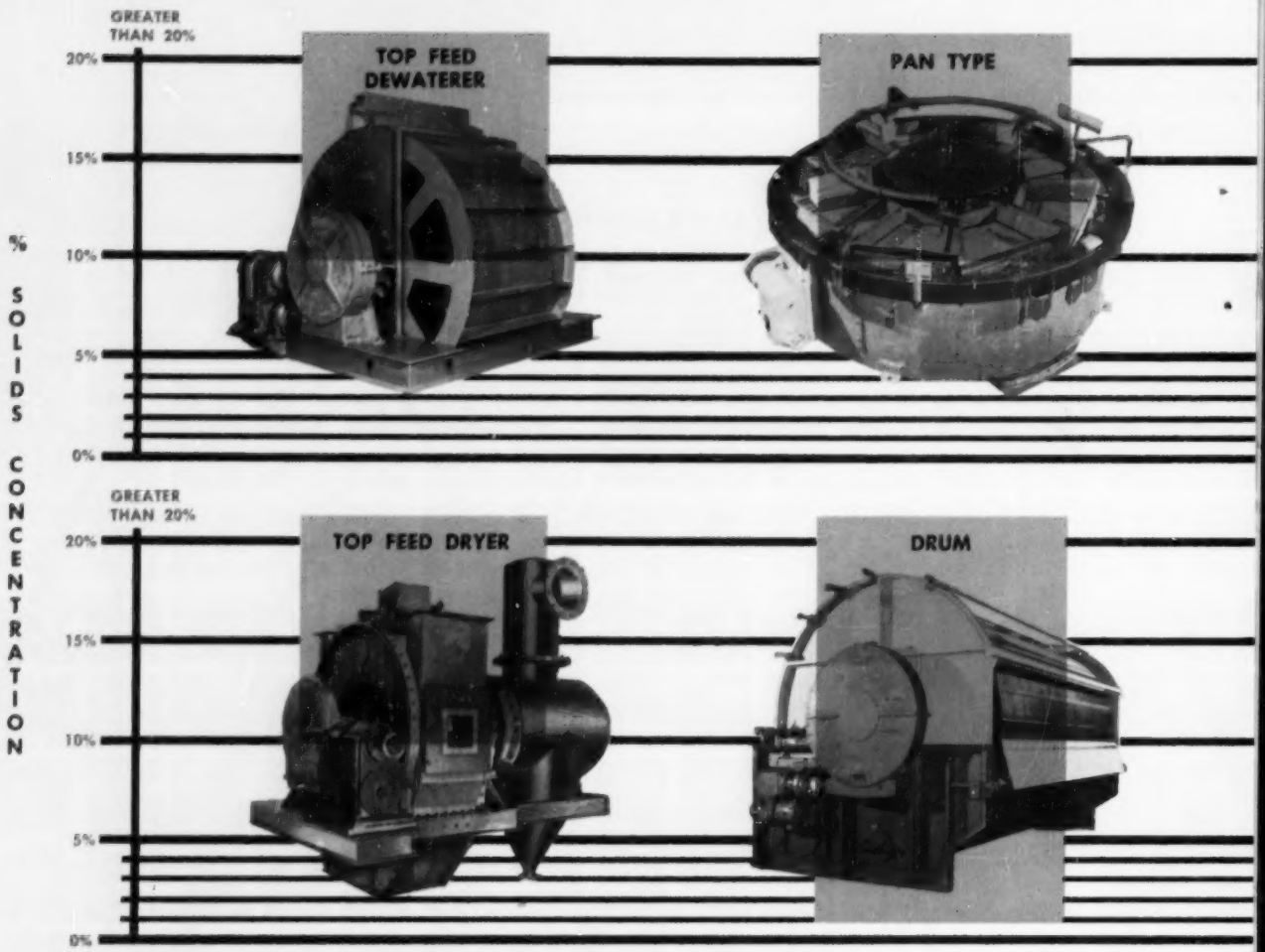
* From advertisement, this issue.

THE EIMCO CORPORATION



Eimco Continuous Vacuum and Pressure Filters are Designed for Practical and Logical Solutions to Problems in Solids — Liquid Separation

BULLETIN F 2541



THERE'S AN EIMCO FILTER TO FIT

To further the science of Solids-Liquid separation through filtration. The Eimco Corporation established its Filtration Research and Development Center at Palatine, Illinois. These new, modern, completely equipped facilities are staffed by engineers internationally recognized as research and development authorities in the field of Solids-Liquid separation. Eimco's years of practical experience combined with the scientific findings of the Research and Development Center engineers give practical and logical solutions to all the processing industries, where filtration is an integral part of their flow sheet.

EIMCO TOP FEED DRYERS AND DEWATERERS

High capacity units designed to filter slurries with a solids concentration of 20% and greater, with very fast settling and very rapid cake formation characteristics. Particularly suited for materials of a granular or crystalline nature which are difficult to filter on standard drum or disc type units. The Eimco Top Feed Dryer is designed with a streamlined hood assembly to direct a heated air flow through the cake and receiver.

EIMCO PAN TYPE FILTERS

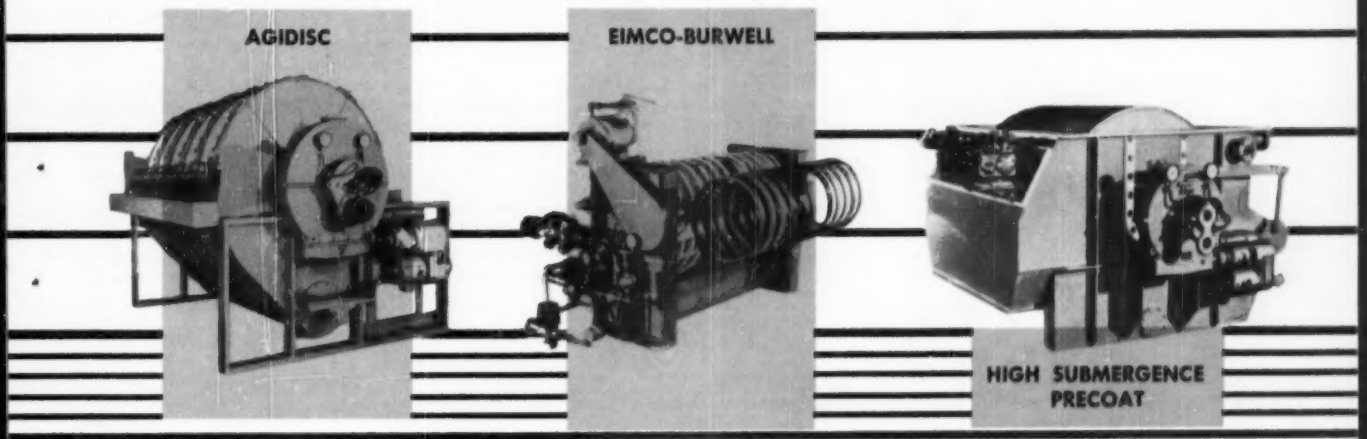
Designed for the filtration of slurries with a solids concentration of 20% or greater, with very rapid cake formation and settling rate. The Eimco Pan Filter utilizes a combination of vacuum and gravity which speeds the liquid flow. The Eimco Pan Filter offers independent pan compartments for extremely sharp liquor separation between washes. Complete cake discharge is obtained since each pan compartment tilts a full 160°. High pressure air snap blow and cover-cleaning shower arrangements are optional features available on the Eimco Pan Filters.

EIMCO CONTINUOUS VACUUM DRUM TYPE FILTERS

Eimco's complete line of Drum Type Filters are designed for the filtration of slurries with a solids concentration of 1 to 20% and greater, with slow or rapid cake formation and slow, medium or fast settling rates. Eimco Drum Type Filters are available for high or low submergence, with string, scraper, or roll discharge mechanisms. Other attachments include compression blankets, wash frames, scoring devices, compression rolls, flappers, and many other devices.

EIMCO CONTINUOUS VACUUM DISC AND AGIDISC FILTERS

Both Disc and Agidisc Filters are designed for the filtration of slurries with a solids concentration of 1 to 20% and greater. The agidisc filter is used where





EVERY SLURRY CHARACTERISTIC

the slurry contains a wide range of particle sizes and is fast settling, with rapid cake formation. These filters are applicable to many materials filtered by drum type filters. Discs and agidiscs have the advantage of lower floor space per square foot of filter area.

EIMCO DRUM AND DISC PRESSURE TYPE FILTERS

Eimco Drum and Disc Type Pressure Filters are designed for the filtration of slurries with a solids concentration of 1 to 20% and greater, with slow or rapid cake formation and normal or fast settling rates. Pressure filters are applied where temperature and vapor pressure limitations on vacuum require pressure, or where toxic or flammable slurries require an enclosed construction, or where the pressure drop across the cake is too great for vacuum filtration. Disc type pressure filters are used where wash requirements are low. Discharge from pressure units with continuous operation is through a locking chamber.

EIMCO PLATE AND FRAME TYPE FILTERS

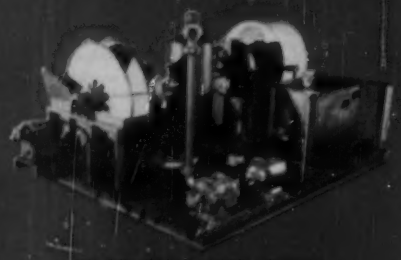
Designed for the filtration of slurries with a solids concentration of 0.1% or less to 20% and greater, with slow or fast settling and rapid or no cake formation. Designed with two sets of circular frames, each pair mounted at 180° of each other on a common shaft. (Also available with single frames.) The Eimco-Burwell filter gives faster opening and closing of the plates on the frames; highly efficient washing, uniform cake density over entire surface of filter media, drier cakes, eliminates all down time for cleaning frames, plus many more advantages.

EIMCO CONTINUOUS VACUUM AND PRESSURE PRECOAT FILTERS

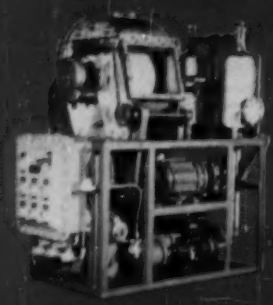
Designed to filter slurries with a solids concentration of 5 to 0.1% or less, with normal settling and slow or no cake formation. Eimco Vacuum and Pressure Precoat Filters are used in the filtration of low viscosity materials where very thin cakes must be discharged or in large scale solution clarification. Available in low or high submergence units with continuous knife advancing mechanisms. Continuous pressure precoats are applied under the same conditions as drum and disc type pressure units.

MATERIALS OF CONSTRUCTION AND SIZES

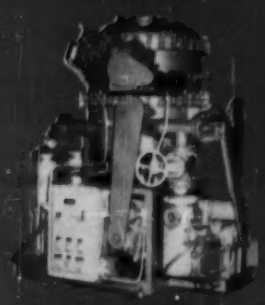
All Eimco filters are made in a complete range of sizes (see back) and constructed with a wide variety of materials including metal, plastics, rubber and wood, depending on the customer's needs.



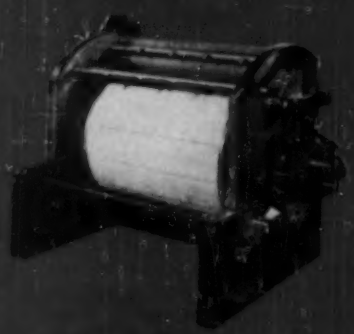
PILOT DISC AND DRUM



LAB DRUM



LAB PRECOAT



PILOT DRUM

EIMCO LABORATORY AND PILOT PLANT TYPE FILTERS

Eimco's complete line of filtration equipment includes proportional sized units suitable for laboratory work. These small units are available in 3 and 6 square foot sizes for disc units and 4 or 8 square foot sizes for drum units.

These small filters are available as laboratory "C F P" units. Complete filter plant units are cabinet style with the filter mounted on top and complete operating equipment mounted in conveniently arranged style below or to the side of the filter. The unit thus built consists of vacuum pumps, blowers, receivers, filtrate pumps, electrical equipment, all wired and piped and mounted on casters so that it may be rolled to any point in the plant for test operation.

Larger size units for pilot plant operation in either drum, disc or other design includes filters to meet the plant requirements. These units are also fully equipped ready to make the necessary service connections.

AREA IN SQUARE FEET OF FILTERING SURFACE FOR PRODUCTION SIZE DISC FILTERS

Number of Discs

Diam.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
18"	3	6												
3'0"	11.5	23	34.5	46										
4'0"	22	44	66	88	110	132								
6'0"	50	100	150	200	250	300	350	400	450	500	550	600	650	700
8'10"			330	440	550	660	770	880	990	1100	1210	1320	1430	1540
10'6"						900	1050	1200	1350	1500	1650	1800	1950	2100
12'0"							1400	1600	1800	2000	2200	2400	2600	2800

AREA IN SQUARE FEET OF FILTERING SURFACE FOR PRODUCTION SIZE DRUM FILTERS

Length in Feet

Diam.	1'	2'	3'	4'	5'	6'	8'	10'	12'	14'	16'	18'	20'	24'
18"	4	8												
3'0"	9.4	18.8	28.2	37.6	47.0	56.4								
4'0"	12.5	25	37.5	50	62.5	75								
5'3"			50	67	84	100	134	167						
6'0"			57	75	94	113	151	189						
8'0"						150	200	250	300	350	400	450	500	
10'0"								314	376	440	503	565	628	
11'6"								360	432	504	576	648	720	864
14'0"								440	528	616	704	792	880	1056

PAN FILTERS IN SQUARE FEET OF FILTER AREA AS FOLLOWS:

10, 25, 60, 90, 120, 150, 180, 210, 240 and larger

EIMCO FILTER MEDIA

Eimco Filter Media Division stocks many synthetic and natural fibers woven into numerous patterns to produce an infinite selection of media to answer any filtration requirement.

The selection of the proper media for your filter will pay for itself many times by eliminating blinding, frequent shut-downs for cloth changing and other reasons for media failure.

An Eimco engineer will be glad to consult with you on media problems and the Filter Media Division will send the samples of the recommended media for your test work.

RENTAL TEST EQUIPMENT

Eimco also has a nubmer of test filters of various sizes and designs which are available for rental service in the user's plant. An Eimco filtration engineer will be glad to talk over your filtration problem with you and suggest the proper unit for your test work.

TEST FOR FILTERABILITY

Eimco's Research and Development Center also maintains an extensive testing department devoted exclusively to the determination of filter requirements for those legitimately in the processing business.

For instructions in sending samples for analysis or research, write Research and Development Center, The Eimco Corporation, 301 South Hicks Road, Palatine, Illinois, or the branch office in any of the cities listed below.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Billings, Mont. Baltimore, Md. Pittsburgh, Pa. Seattle, Wash. Pasadena, Calif. Houston, Texas Vancouver, B.C. London, England Sandviken, Sweden Paris, France Milan, Italy Johannesburg, South Africa

F 2041, 50M, 65-7 Printed in U.S.A.

TECHNICAL LITERATURE

Evaporators & Preheaters, Milk—Mills, Blade

Evaporators & Preheaters, Milk.....Illustrated, 12 p. covers line of milk evaporators & milk preheaters. Feature numerous advantages — neat, compact, efficient, sanitary, reliable, etc. Request Bulletin No. D 141.
321A Henszey Co.

Evaporators, Turba-Film.....Evaporators give rapid one-pass evaporation of liquids, slurries and gases . . . especially heat-sensitive substances . . . all by continuous process. Literature available on request.
321B Rodney Hunt Mach. Co.

Extraction, Liquid-Liquid.....12 pg. concerned with coordinating existing data & presenting simplest & most direct methods for study & design of liquid-liquid extraction processes. Diagrams & charts.
303j *Otto H. York Co.

Extraction, Solvent.....Bulletin presents the principles of operation, typical applications and engineering information on standard laboratory and pilot plant York-Scheibel multi-stage extraction units.
303b *Otto H. York Co.

Extruding Machines, Screw-Type..... Fully illustrated, 32 p. describes Farrel-Birmingham screw-type extruding machines — plasticators, pelletizers, extruders, strainers, strainer-extruders, etc. Bulletin 195.
321C Farrel-Birmingham Co.

Film Slitters, Plastic.....Presents fully illustrated Bulletin describing the new Slit-Go, Model No. 2500 . . . a precision-built slitter-rewinder, designed for speed, dependability, and economy of operation. 4 p.
321D Slit-Go, Inc.

Filter Cloth.....Modern precision fabricating facilities are dedicated to quality production of the processing units you need. Test work on filtering, straining and screening problems. Request Catalog 50.
331a *Multi-Metal Wire Cloth Co.

Filter Cloth, Metallic.....Newark metallic filter cloth is available in a variety of weaves in all malleable metals, and is adaptable to practically all types of filters. Complete data in new Catalog "E."
321E Newark Wire Cloth Co.

Filter Fabrics.....The right fabric adds efficiency to continuous operation. Announces availability of a fully illustrated booklet, "Filter Fabric Facts," describing filter fabric development and application.
321F Wellington Sears.

Filter Leaves.....New "RIM-LOK" Filter Leaf provides simple closure of metal filter cloth in leaf frame without use of rivets, bolts or solder. Made of any commercial alloy. For details, see Catalog 50.
331b *Multi-Metal Wire Cloth Co.

Filter Media.....Anthrafilt provides greater capacity . . . longer filter runs . . . cleaner washings at lower cost . . . removes entrained turbidity from industrial process solutions or wastes. Request full details.
316 *Palmer Filter Equipment Co.

Filter Paper.....The use of E&D filter paper as a cover may be indicated if your filter medium is blinding or clogging. Will recommend proper grade for use and send samples for testing. "Filtration Analysis Report."
321G Eaton-Dikeman Co.

Filter Sheets.....Complete range of stainless steel plate & frame sheet filters now available. Ideal for products ranging from ultra fine pyrogen solutions to coarse prefiltered bulk chemicals. Catalog.
321H Ertel Engrg. Corp.

Flakers.....Stokes flaker replaces batch method in the processing of moth-killing chemical. Full details of laboratory and advisory service for solution of production problems are covered in Bulletin No. 640.
321I F. J. Stokes Mach. Co.

Generators, Inert Gas.....Assure a safe, dependable supply of chemically clean inerts. Deliver inerts at a special analysis . . . without fluctuations. For facts and technical data, request Bulletin 1-10.
321J C. M. Kemp Mfg. Co.

Generators, Inert Gas.....At a moment's notice of fire or explosion dangers, smothering gas flows instantly from R-C inert gas generators. Details on how they afford constant protection in Bulletin IGG-155.
321K Roots-Connersville.

Generators, Oxygen....."On-Location" generators can provide a continuous supply of oxygen regardless of requirements—including moderate to large tonnage users. More than 800 installations. Request information.
330 *Air Products.

Grinding Equipment, Valve.....Describes the all-new Dexter Power Driven Valve Grinding equipment . . . designed to grind the seat of any globe or gate type valve regardless of valve material hardness. 6 p.
321L Leavitt Mach. Co.

Grinding & Blending Systems.....Integrated system features savings in time and money in combined functions of grinding, blending and dust control. Results in greatly increased production. Illustrated Bulletin.
321M Pulverizing Machy. Div.

High Pressure Equipment.....Illustrated, 28 p. describes rapidly expanding line of high pressure valves, adaptors, reactors, autoclaves, thermocouplings, gages, fittings & tubing. Request Catalog No. 2055.
321N High Pressure Equipment Co.

High Pressure Equipment.....Equipment described in new 100 p. catalog embraces pilot plants, reaction vessels, fittings, valves, tubing, pumps, compressors, instruments, etc. Request Catalog 406-D-24.
321O American Instrument Co.

Homogenizers.....Illustrated 12 pg catalog describes the "Stellar Series" Superhomo Homogenizers. Includes eight models, for capacities from 50 to 3000 gal. per hr. Also contains dimension tables. Bulletin G-517.
305e *Cherry-Burrell Corp.

Hoods, Exhaust.....New bulletin describes different designs of exhaust hoods for dust control in the woodworking industry. Gives localized applications in this specialized field. Bulletin 270-E2.
321P American Air Filter Co.

Hydraulic & Air Components.....36 p. book, "Hydraulic & Air Components by Star Jack," describes products & services. Features, specifications & applications of pumps, cylinders, jacks, etc. Catalog No. 555.
321Q Star Jack Co.

Impactors.....Offer lowest possible cost-per-ton in producing top quality materials from 2" down to 35 mesh with a minimum of fines—or much smaller where more friable products are handled. Detailed literature.
321R Williams Patent Crusher.

Ion Exchangers.....With operating costs figured in pennies per thousand gals., Industrial Ion exchangers are specially built for water purification, waste treatment, metal recovery, etc. Bulletin No. 200-8M.
167f Industrial Filter & Pump.

Jet Apparatus.....Includes basic information on jet principle, jet apparatus terminology, and data on jet construction, operation and advantages offered by jet apparatus. 12 p. illustrated Bulletin No. J-1.
321S Schutte & Koerting Co.

Kilns, Rotary.....Offer these improvements: all welded; one-plate-to-a-circle construction; patented heat recuperation; effective air seals; centralized control; air-cooled feed and discharge ends. Details.
321T Allis-Chalmers Mfg. Co.

Kilns, Rotary.....Efficient thermo-processing of products. Used in the production of lime, bauxite, cement, sodium silicate, alumina, etc. Complete data on design features offered in illustrated Bulletin 1115.
332 Traylor Engrg. & Mfg. Co.

Laboratory Equipment.....Batch and continuous test models of crushers, screens, ball mills, pulverizers, rod mills, classifiers, agitators and mixers, pulp distributors, feeders, etc. Data in Bulletin LG3-B10.
321U Denver Equipment Co.

Laboratory Equipment.....Issues a new edition of "What's New for the Laboratory"—25th in the series. Covers portable air compressors, Dalin condensers, Corning pipettes, humidity apparatus, etc. Illustrated.
321V Scientific Glass Apparatus Co.

Laboratory Equipment.....Investigate Sturtevant equipment for your laboratories. They will help you cut sampling cost—improve product quality—increase sales. For complete data, request illustrated Bulletin.
321W Sturtevant Mill Co.

Laboratory Glassware.....Makes available a revised 139 p. catalog of custom-made Pyrex brand laboratory glassware. New listing illustrates and describes over 6000 special glass apparatus items. Catalog No. CA-2.
321X Corning Glass Wks.

Laboratory Polyethylene Ware.....12 p. describes line & also introduces laboratory ware made from a new polyethylene (Ziegler Process), which is quite rigid, has much higher tensile strength, etc. Catalog No. D-1055.
321Y Palo Laboratory Supplies.

Laboratory Ware.....Offers many properties important to development, experimental or analytical work. It is chemically stable, stands temperatures to 1900° C. and is easy to clean. Complete data in Bulletin 793.
35-8d *Norton Co.

Mats, Drying.....Low temperature, variable inclination rubber-tired DehydrO-Mat dries ammonium nitrate & other hard-to-dry chemicals requiring hours of hold-up time. Request complete information & literature.
326b *Edw. Renneburg & Sons Co.

Mills.....Data on the Raymond Ray-Ducer . . . for grinding small and medium capacities of soft, dry materials. Can be opened in seconds for cleaning, inspection or changing screens. Request Bulletin No. 80.
321Z Combustion Engrg.

Mills.....Illustrated reference. "The Kady Mill," describes the numerous features; highest production rates; fastest loading & unloading; best color or hiding-power development; most versatile; etc. 16 p.
321AA Kinetic Dispersion Corp.

Mills, Ball.....A steel-head ball mill will suit your particular need. Five types of discharge trunnions. All-steel construction. Low initial cost due to quantity production. Quick delivery. Bulletin No. B2-B13.
321BB Denver Equipment Co.

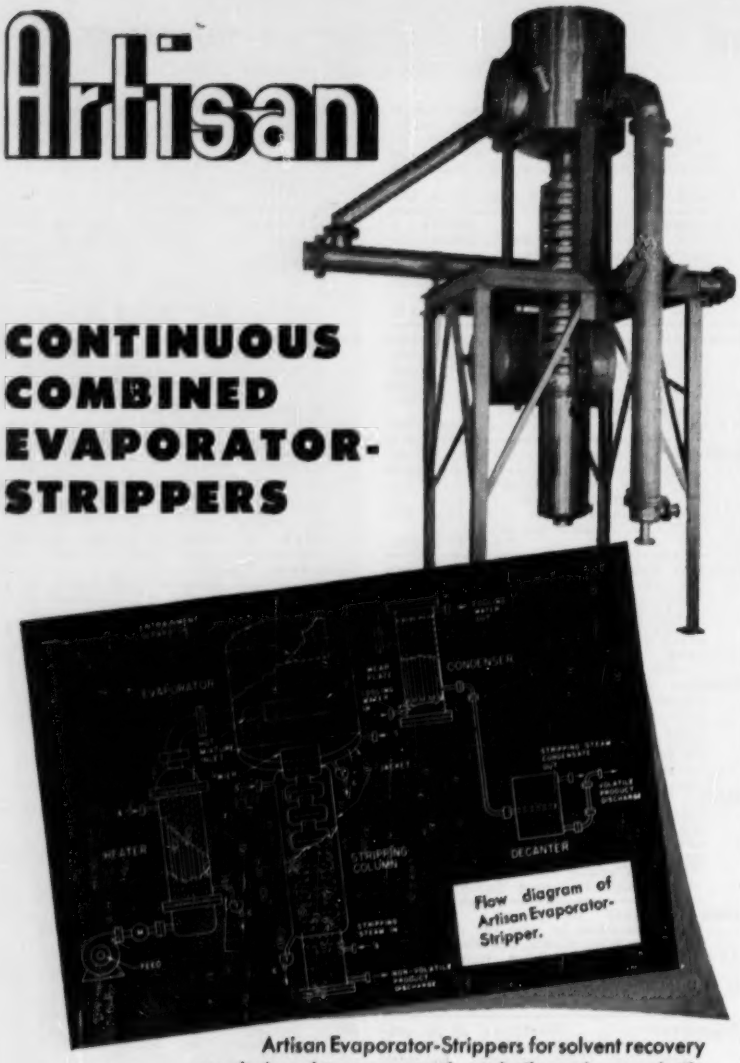
Mills, Ball & Pebble.....Announces the availability of a valuable Ball & Pebble Mill Catalog—40 p. of material regarding selection of right mill for job, description of equipment, etc. See Catalog Y, Section B.
156a *Paul O. Abbé

Mills, Blade.....Designed for large tonnages of hard-to-wash materials, blade mills effectively disintegrate & wash into suspension tenacious clays and other unwanted substances. Request literature.
321CC Allis-Chalmers Mfg. Co.

* From advertisement, this issue.

Artisan

CONTINUOUS COMBINED EVAPORATOR-STRIPPERS



Flow diagram of Artisan Evaporator-Stripper.

Artisan Evaporator-Strippers for solvent recovery are designed to separate the volatile and non-volatile components of a liquid mixture — continuously and with high efficiency. Partial separation takes place in the evaporator and complete separation in the stripper. (See diagram.)

Every Artisan Evaporator-Stripper is custom-designed to fit the physical properties of the two liquids. They can be supplied in a wide range of sizes to handle anywhere from 25 to 1000 gallons per hour. Operation of the system is from atmospheric pressure to 29 inches of vacuum, depending on the characteristics of the liquids to be separated. Either manual or automatic control is available.



Write for our bulletin PROCESS EQUIPMENT.

While Artisan Evaporator-Strippers are primarily used for solvent recovery, they have a much wider field of application and in many instances will eliminate the need for elaborate fractionation equipment.

If your problem involves the separation of two liquids, write us the pertinent details. No obligation.

Artisan METAL PRODUCTS, INC.
73 Pond Street, Waltham, Mass.

* From advertisement, this issue.

1956 INVENTORY

TECHNICAL LITERATURE

Mills, Colloid—

Mills, Vertical

Mills, Colloid.....Operate at speeds approaching the theoretical minimum required for true wet micro grinding —shaft speeds up to 10,000 rpm depending on size and type of mill. Offers descriptive literature.
322A Admiral Tool & Mfg. Co.

Mills, Compacting.....Used to produce paper-thin flakes or to increase the apparent density of your product. Mills handle a variety of grinding, crushing, rolling or compacting jobs. Details available.
322B Allis-Chalmers Mfg. Co.

Mills, Disc Roll.....Particularly suited for grinding relatively soft minerals, such as limestone, coal, bauxite, talc, etc. Describes details of operation and application of mill in thoroughly illustrated 8 p. Bulletin No. 52.
322C Hardinge Co.

Mills, Grinding.....Mills applicable for wet or dry, coarse or fine grinding. Assure a uniform product of desired fineness. Improved design and construction features fully described. Illustrated Bulletin No. 8121.
322D Traylor Engrg. & Mfg. Co.

Mills, Grinding.....Features of this system assure maximum flexibility, uniformity and dust-free performance. Specialize in complete Carbon Paste and Carbon Plant installations in aluminum field. Details.
323 *Kennedy-Van Saun Mfg.

Mills, Grinding.....Allis-Chalmers can meet your specifications whether your process calls for individual mills or a grouped stage grinding series. Request complete information on 7 different types of grinding mills.
322E Allis-Chalmers Mfg. Co.

Mills, Hammer.....Williams heavy duty hammer mills: increase your output; improve product quality; reduce your cost-per-ton. For complete details of features and advantages, request complete product reference.
322F Williams Patent Crusher.

Mills, Jar.....Valuable descriptive literature is made available containing 40 p. of information regarding design, construction & operation of Paul O. Abbé Jar Mills. Request Jar Mill Catalog U—Section A.
156b *Paul O. Abbé

Mills, Roller.....Positive and continuous precision size control at exceptionally high production rates are but two of the numerous features of Williams Roller Mills. Request fully descriptive new Catalog.
322G Williams Patent Crusher.

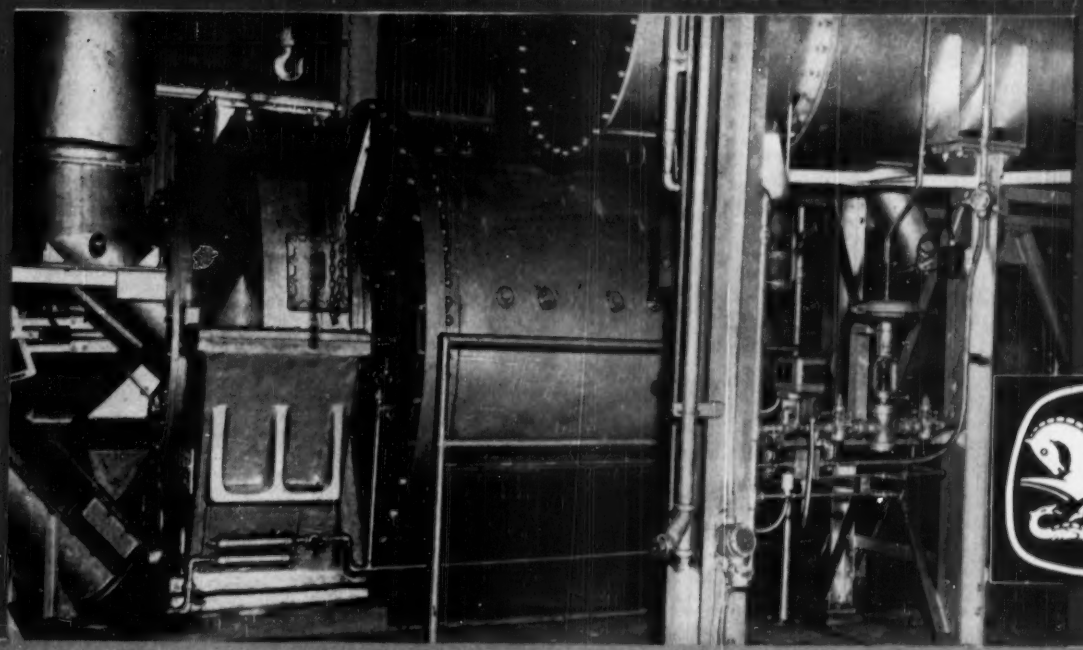
Mills, Roller.....When making any kind of powdered pigments or commercial fillers, use of High-Side Roller Mill with Whizzer Separation offers important production advantages. See Catalog No. 79.
322H Raymond Div.

Mills, Tube & Rod.....Continuous feed and discharge, wet or dry, in open or closed circuit, produces the utmost in grinding performance and economy. Each mill is engineered for its job. Request details.
322I Patterson Foundry & Mach. Co.

Mills, Vertical.....Describes the Raymond vertical mill . . . for producing superfine powdered materials in the lower micron sizes beyond the range of an ordinary pulverizer. Complete details in Bulletin No. 70.
322J Raymond Div.

Mills, Vertical.....Company is presenting compact, high-speed pulverizers which offer an economical means of making super-fine materials to meet today's high specifications. Full details available in Bulletin 78.
322K Raymond Div.

KVS Carbon Paste Preparation Plant, showing Kennedy 7' x 12' mill, integral gear driven tube Ball Mill for combined grinding and drying using gas fired hot air furnace and controls.



In the Aluminum Field... **KENNEDY AIR SWEPT GRINDING MILLS CHOSEN BY REYNOLDS ON A BASIS OF PROVEN PERFORMANCE**

FOUR KENNEDY INSTALLATIONS TO DATE FOR REYNOLDS METALS

★ Arkadelphia, Ark.

★ Corpus Christi, Tex.

★ Listerhill, Ala.

★ Longview, Wash.

REYNOLDS METALS COMPANY chose Kennedy Air Swept Grinding Mills for preparation of Electrodes and Reduction Pot Linings. Features of the Kennedy system assure utmost flexibility, uniformity and dust-free performance. Complete Carbon Paste and Carbon Plant installations are our specialties in the *aluminum field.*

Send for engineering data on KVS Grinding Mills and Materials Handling Equipment.

KENNEDY-VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

TWO PARK AVENUE, NEW YORK 16, N.Y. • FACTORY, DANVILLE, PA.

TECHNICAL LITERATURE

Molding Machines—

Pulverizers

Molding Machines.....The Vogt automatic tube-type molding machine forms and sizes any liquid that will solidify when cooled, and will discharge by gravity without heating. Technical information available.
324A Henry Vogt Mach. Co.

Pelleters, Continuous.....Produce top-quality pellets in tremendous volume at reasonable investment & low operating cost. Large & small pellets—even 1" cubes—in many shapes & sizes. Complete details.
324B Sprout, Waldron & Co.

Precipitators.....Illustrated & documented reference describes applications, principles of operation, design features, advantages, recommendations, flow diagrams & specifications of product line. Bulletin 2204C.
324C Permutit Co.

Precipitators, Electrostatic.....Koppers enables you to get peak gas cleaning efficiency from your precipitator at a minimum of operating maintenance ... with new automatic power control. Complete information.
324D Koppers Co.

Prebreakers.....Utilizing high torque at relatively low speeds, they will do an efficient crushing & breaking job, replacing in many applications jaw, roll & rotary crushers, hammer mills, shredders, etc. Bulletin 502.
324E Rietz Mfg. Co.

Presses, Dewatering.....The variable speed continuous dewatering press extracts surplus moisture economically from products having physical properties of a fibrous nature. For information, request Catalog A.
324F Davenport Mach. & Fdry. Co.

Presses, Filter.....Offer numerous features: lowest cost per sq. ft. of filtering area; produce perfect clarity of filtrate; can be used in decolorizing —deodorizing; etc. Request illustrated Catalog No. 55.
315b T. Shriver & Co.

Presses, Wax Molding.....Cools and molds paraffin or natural wax, or other substances, into multiple cakes of uniform size, weight and appearance, without shrinkage. For detailed information, request Bulletin 127.
315e *T. Shriver & Co.

Process Equipment.....Describers entire company line—conical mills, single & double-shell rotary dryers, automatic backwash sand filters, thickeners-clarifiers, constant-weight feeders, etc. Catalog 100-A-11.
307a Hardinge Co.

Process Equipment.....Sprout, Waldron installations achieve a degree of specific fitness that is unusual in industry. Offers bulletin on equipment & systems for processing materials. Request Bulletin 95.
324G Sprout, Waldron & Co.

Process Equipment.....New 8 p. bulletin describes spiral ribbon mixers, double-arm mixers, planetary-action vertical mixers, laboratory mixers, sifters, storage bins, weigh hoppers & screw conveyors. Bulletin 55782.
324H Read Standard Corp.

Process Equipment.....12 p. Corrosion Guide made available to users of corrosion resisting processing equipment as a handy reference chart. For help in selecting corrosion resisting metals —"Misco Corrosion Guide."
324I Misco Fabricators.

Process Equipment.....Submerged Combustion equipment helps reduce cost in processes where a liquid is to be subjected to heat, carbonation or a chemical reaction. Request "Subcomco Application Manual"
181b *Submerged Combustion Co.

Process Equipment.....32 p. bulletin covers all Allis-Chalmers equipment for the process industries. This bulletin, as well as literature covering specific equipment lines, is available. Bul. 25C6177.
324J Allis-Chalmers Mfg. Co.

Process Equipment.....Bowser "Digest" covers: meters with ticket printers providing accounting records of liquid receipts, transfers and deliveries; filters of all types; blenders for any number of liquid components.
324K Bowser, Inc.

Process Equipment, Fabricated.....For your most efficient means to fast, economical production, for individualized equipment designed & constructed to fit your needs, request a copy of Koven's Bulletin 550.
324L L. O. Koven & Bro.

Process Systems.....Allis-Chalmers process system converts fine particles into granular product to meet consumer demand. For complete information, company offers a detailed reference, Bulletin No. 25C6177J.
324M Allis-Chalmers Mfg Co.

Processing, Air-Gas.....The Selas Liqui-Jector continuously removes water, water-oil emulsions and dirt particles from air, gas and steam. For complete information on features request Bulletin No. SC-1007.
324N Selas Corp. of America.

Processing Equipment.....Catalog describes Jeffrey material-handling and processing equipment. Equipment for moving materials by conveyor belts, spiral conveyors, bucket elevators & scraper conveyors. Catalog 860.
324O Jeffrey Mfg. Co.

Processing Equipment.....Modern precision fabricating facilities are dedicated to quality production of the processing units you need. Also provides research and development studies. Details in Catalog No. 50.
331d *Multi-Metal Wire Cloth Co.

Processing Equipment.....Describes corrosion-resistant processing equipment ... precision built to your specific requirements to give long years of peak performance with low maintenance. Technical Bulletins.
324P Lee Metal Products Co.

Processing Equipment, Liquid.....Presents a fully illustrated, 32 p. reference describing "Sealed-Disc" and "Disc-Pak" filters, transfer pumps, portable mixers, tanks, agitators, etc. Request Bulletin No. G-255.
324Q Alsop Engrg. Corp.

Processors.....New 12 pg. bulletin describes the complete line of multi-purpose, heavy-duty processing vats. For each type described, there are illustrations and diagrams. Dimensions are also given. Bulletin G-512.
305d *Cherry-Burrell Corp.

Propellers.....Data Folder describes smooth, vibrationless propellers for stirring, mixing, aerating, etc. Balanced to avoid whip and strain on shafts. In a wide variety of metals, and in sizes up to sixty inches.
324R Michigan Wheel Co.

Pulverizers.....Mikro-Bud will handle a comprehensive range of dry materials for a considerable number of uses in chemical, food, pharmaceutical, drug, cosmetic, plastic & allied industries. Bulletin & Data Sheet.
324S Metals Disintegrating Co.

IF YOU Will Tell Us The Product You Are Filtering—Type of Equipment You Operate—Plate and Frame Or Rotary Filter—Whether Acid or Alkaline Solution — Temperatures — Pressure — We WILL MAKE SOME SUGGESTIONS.

•

OVER 40 different cotton weaves, including filter twills, chain-cloths, and filter flannels.

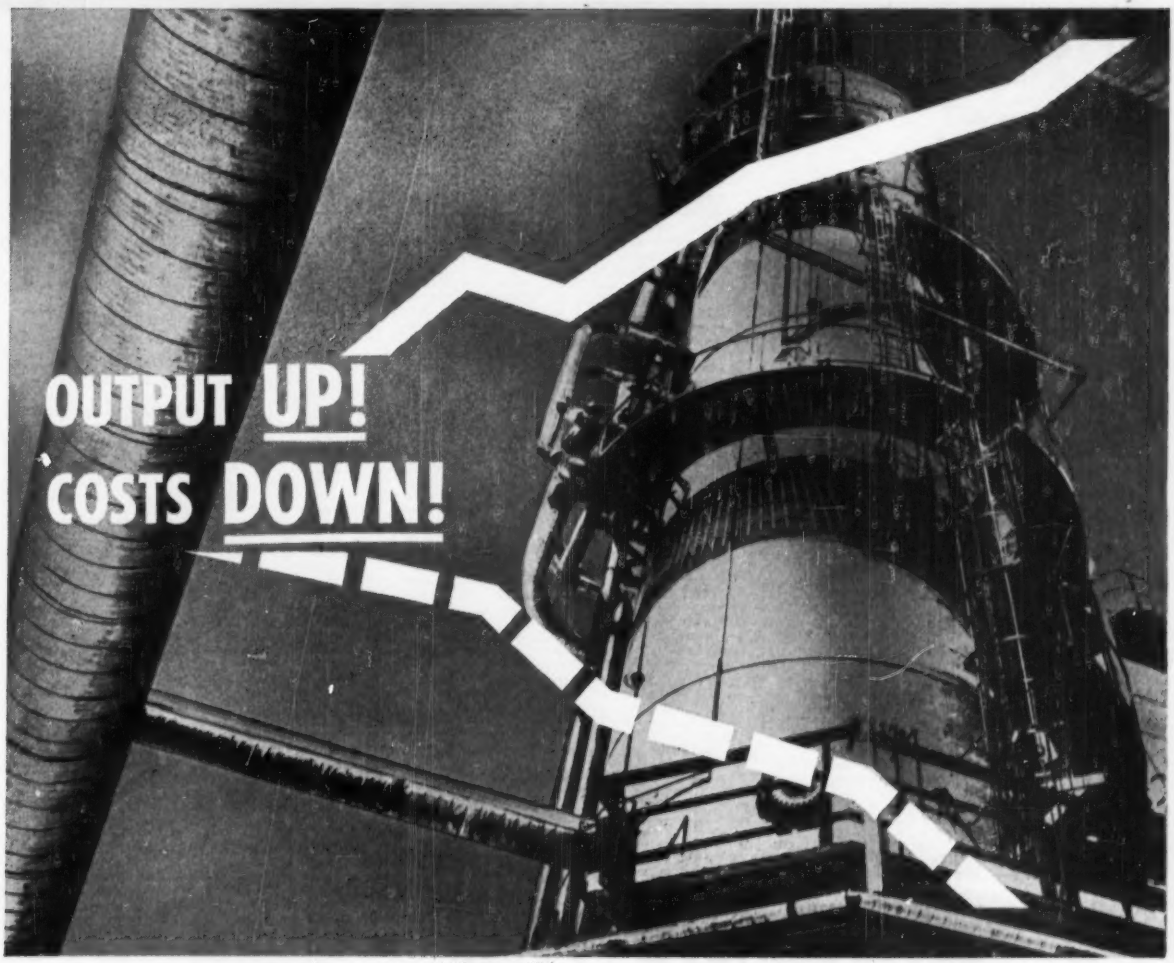
We also handle synthetic fabrics for acid and alkaline solutions — Nylon, Orlon, Dynel, Polyethylene, Dacron, Saran. Woven glass cloths for highest temperatures.

These cotton and synthetic fabrics are furnished by the yard or by the roll or cut and fabricated to meet your requirements.

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FACTS AND FIGURES
ABOUT FILTER CLOTHS

We believe we can help you solve your
FILTER CLOTH problems
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WM. W. STANLEY CO.
INC.
401 BROADWAY
NEW YORK 13, N. Y.

* From advertisement, this issue.



with METEX Hi-Thruput MIST ELIMINATORS

METEX Hi-Thruput Mist Eliminators, installed in process towers and vessels, effect sharp separation of liquids and gases. Quality and yield are increased. Valuable liquids are knocked out and returned. Contamination of subsequent processing is removed. Turbines and compressors are protected from damaging liquids. Where build-up of coke or solids is a consideration, on-stream service life is increased three to four times. Air pollution is reduced, too.

METEX Hi-Thruput Mist Eliminators provide virtually 100% removal efficiency, even at extreme temperatures and pressures. Pressure drop is negligible. Their outstanding performance is due to repositioning of the wires by the METEX patented Herringbone Fold . . . an exclusive development of the originators of knitted wire mesh entrainment separators. Impingement target area is increased and stagnation points reduced.

In any processing equipment or vessels where liquid entrainment is a contributing factor in design or operation, specify METEX Hi-Thruput Mist Eliminators to assure greater production, improved quality of yield and substantially reduced operating and maintenance costs.

For complete information and specifications, write today for your free copy of Bulletin No. ME-6.

6-201

METAL TEXTILE CORPORATION ROSELLE, NEW JERSEY

Metal Textile Corp. of Canada, Ltd., Hamilton, Ontario • Representatives in principal cities throughout the world

TECHNICAL LITERATURE

Pulverizers—

Separators

Pulverizers.....The new Mikro-Multi-D pulverizer has been designed for any processing system in which purity of the product is of prime importance. Request a copy of Mikro-D Bulletin & Test Grinding Data Sheet.
326A Metals Disintegrating Co.

Pulverizers.....Valuable data on Superfine pulverizer . . . a centrifugal air attrition impact pulverizer and classifier in a single unit. Covers numerous features, specifications, construction, etc. Illustrated.
326B Schutz-O'Neill Co.

Pulverizing.....Describes Raymond pulverizing, separating and drying units. Every unit is rugged and dependable . . . designed and built to do your job more simply and at a lower cost. Request Bulletin No. 80.
326C Raymond Div.

Reactors.....Plant Size Reactors with Lab-Equipment Precision combine the most advanced design engineering in the high pressure field with the finest materials available. Send for your copy of Bulletin 356.
326D Autoclave Engineers.

Reactors, Chamber Type.....Polymerizes plastic resins at controlled rate of heating and cooling to produce multiple slabs of finished product of any desired size, 12" to 56" square, from 12" to 5" thick. Bulletin 142.
315n *T. Shriver & Co.

Reactors, Glassed Steel.....Six different agitator speeds: 60, 90, 120, 175, 250 & 340 rpm are now available on Pfaudler reactors up to 100 gallons. For complete product information, request Bulletin No. 923.
326E Pfaudler Co.

Reactors, Glassed Steel.....Larger size reactors are now equipped with an 18" diameter round manhole, & the manhole has been moved nearer the side of the reactor. For more complete information, request Bulletin 926.
326F Pfaudler Co.

Reactors, Glassed Steel.....Offer a wide range of sizes . . . 5 to 4,000 gals.; several ways to adapt top-head openings, agitators, seals, and valves in meeting changing temperature & pressure requirement. Bul. 936.
326G Pfaudler Co.

Receivers, Air or Gas.....Built in accordance with ASME standards. 2 1/3 to 570 cu. ft. capacity, for 23 to 8000 cfm. Includes information on features and specifications in illustrated Bulletin No. R-19C.
337j Joy Mfg. Co.

Reclamation Systems.....Denver reclamation systems take dollars out of your wastes—if you have valuable materials in your wastes, these systems can make recovery profitable. Request illustrated literature.
326H Denver Equipment Co.

Reclaimer Systems, Oil.....A simple, economical and efficient method of restoring contaminated lubricating and sealing oil to the full value of new oil. Offers full details on reclaimers in Bulletin R-160.
326I Hilliard Corp.

Roll-Setting.....Hydra-Set is a unique hydraulic roll-setting device that takes all guesswork out of roll settings. Comes as optional equipment on new mills or as field conversion kit. Spec. Sheet No. 1-400 R.M.
326J J. H. Day Co.

Sampling Systems, Gas.....The new Hays Gaspirator System is designed especially for difficult gas sampling problems involving high dust loading and high temperatures. Full details in Bulletin No. 55-829-56.
326K Hays Corp.

Screeners, Power.....For smoothing out lumpy chemicals or other agglomerated materials before mixing, blending or dissolving. Keeps particle breaking or grinding to a minimum. Request literature.
161b *Prater Pulverizer Corp.

Screens.....Laboratory is always available for test work on filtering, straining and screening problems. Quality production of the processing units you need. For further information, request Catalog No. 50.
331e *Multi-Metal Wire Cloth Co.

Screens, Gyratory.....New in design, performance & economy. Top efficiency in screening . . . maximum capacity . . . profit insuring quality control . . . simplified maintenance, etc. For details, see Bulletin 07B8446.
326L Allis-Chalmers Mfg. Co.

Screens, Vibrating.....Announces a new "Aero-Vibe" screen (Model AVS) which utilizes a simplified two-bearing design with counterweight wheels and sturdy bolted construction. Request 12 p. Bulletin No. 07B6099A.
326M Allis-Chalmers Mfg. Co.

Screens, Vibrating.....Data on Straight-line—a horizontal vibrating screen of new design. Especially suited for dewatering high capacity loads & sizing of material where headroom is limited. Data Sheet No. 2562.
326N Link-Belt Co.

Screens, Vibrating.....For economical separation of light to medium weight materials—choose "UP" vibrating screens. In open, semi-enclosed, or totally-enclosed types. Complete details contained in Book 2377.
326O Link-Belt Co.

Screens, Vibrating.....For high-capacity screening of a broad range of materials—"CA" vibrating screens are your answer. In complete range of sizes to suit all plant capacity requirements. New Book 2554.
326P Link-Belt Co.

Screens, Wire.....Wire screens for vibrators are serving faithfully in daily operations in the major coal and mining centers of the world. Offers complete information on product line in Bulletins Nos. 5, 6 and 7.
326Q Cleveland Wire Cloth & Mfg.

Separating & Sizing Machinery.....If you process granular materials that must be uniform in length, widths, or thickness, Hart-Carter sizing machinery may be what you need. Details in Folders CPG-2 and L-1.
326R Hart-Carter Co.

Separators.....New 24 p. 1955 SWECO Separator Catalog features photos, drawings, detailed specifications of equipment now successfully screening more than 241 different materials. Includes a complete data file.
326S Southwestern Engrg. Co.

Separators.....“Westfalia” separators & clarifiers used for warm or cold clarifying, warm separation to 11,000 lb. per hr., cold separation to 5511 lb. per hr. Request Bulletin No. F5504.
305g *Cherry-Burrell Corp.

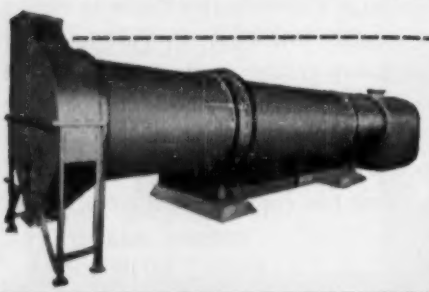
Separators.....4 p. illustrated bulletin describes the hermetically sealed "Tri-Purpose" separator, for separating, clarifying, standardizing at a temperature range from 40 to 160 F. Request Bulletin No. 2134.
305i *Cherry-Burrell Corp.

Chemicals are Dried Quickly, Economically

in.... DehydrO-Mat PAT. PENDING



Steam-heated DEHYDRO-MAT
Low temperature, variable-inclination, rubber-tired DehydrO-Mat dries ammonium nitrate and other hard-to-dry chemicals requiring hours of hold-up time.



CONVENTIONAL DRYER
Heavy-duty rotary unit with furnace, burner, breeching and air-handling system. Used for ammoniated granular fertilizers and other chemicals.

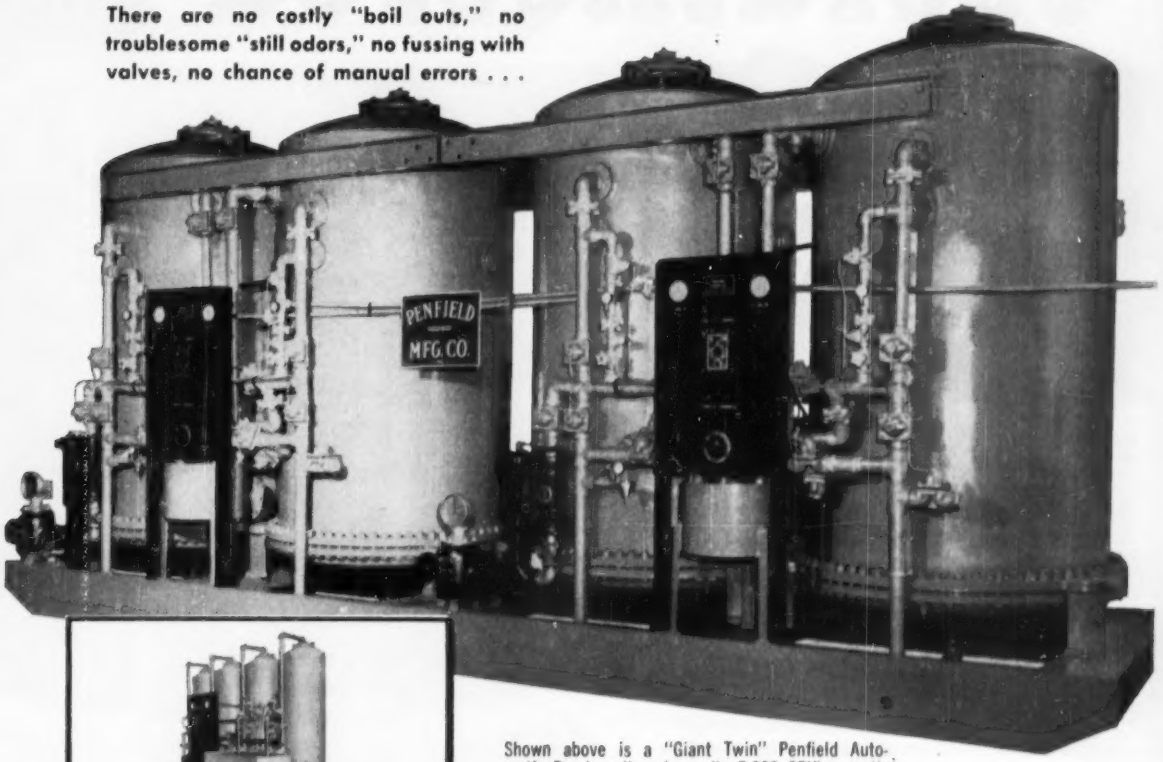
Literature and information on request.

EDW. RENNEBURG & SONS CO.
Baltimore 24, Maryland, U.S.A.

* From advertisement, this issue.

KING SIZE *or REGULAR*

There are no costly "boil outs," no troublesome "still odors," no fussing with valves, no chance of manual errors . . .



Shown above is a "Giant Twin" Penfield Automatic Demineralizer (capacity 7,200 GPH) recently installed in a new General Electric Company plant at Appliance Park, Louisville, Ky.

Model A-1000 Penfield Four-Column Demineralizer (capacity 1,200 GPH). Whatever design and capacity Penfield Demineralizer is desired, each unit is available equipped for completely automatic operation — including activation of the regeneration cycle, recutting in effluent, and refilling the regenerative tanks.



Model M-100 Penfield Mono-Column Demineralizer (capacity 90 GPH). Each Penfield unit, whether of mono- or multi-column design, is completely "packaged" — requires only simple connection to service lines to start delivering its full rated capacity of super high purity process water.

Penfield Demineralizers Supply Highest Purity Water at Lowest Cost — *Completely Automatically*

Demineralization with the latest available resins can remove all types of impurities, ionizable and non-ionizable, including minerals, organic gases and even bacteria — with an efficiency* that's truly a modern miracle.

And now Penfield Demineralizers may be secured in any capacity you require: 90 GPH, 200 GPH, 2,000 GPH and up — each completely "packaged" unit equipped to perform all its operating functions, including the regenerating cycle, entirely automatically.

There are no valves to turn and only a minimum of "check-up" supervision is necessary. All steps in the regenerating cycle — from activation to rinsing, recutting in effluent when desired resistivity (purity) is reached, and even refilling the regenerative tanks with fresh water — are completely *automatic*.

You owe it to your product, your process *and* your balance sheet to be up to date on how Penfield Automatic Demineralizers can serve you. Write today, specifying your approximate gallonage requirements.

* Purity in excess of 20,000,000 ohms is routine performance for Penfield Demineralizers. National average chemical cost for Penfield demineralized water is less than 20¢ per 1,000 gallons.

Penfield

MANUFACTURING COMPANY, INC.
19 High School Ave., Meriden, Conn.

The Pioneer Manufacturer of Industrial Demineralization Equipment

"Coordineered" to

PLANT PROCESSING EQUIPMENT

NEW Stainless Steel GYRATORY SCREEN

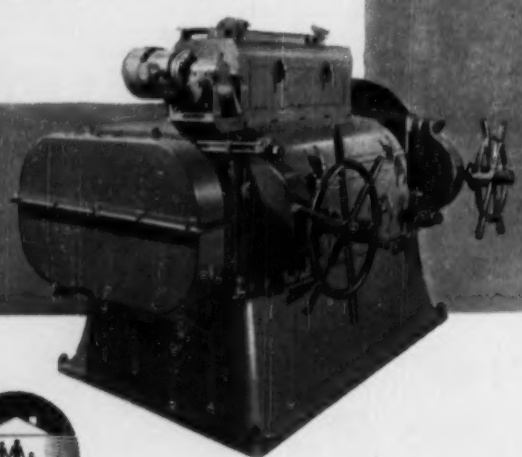
. . . provides three outstanding advantages:

1. Modern design plus the use of stainless steel facilitates upgrading product, affords quality control.
2. Interchangeable, multiple screen arrangements permit variable capacities.
3. Efficient but gentle gyratory motion exposes product to maximum number of screen cloth openings.



Compacting MILL

. . . compresses dried or conditioned material into uniformly thick sheets or flakes.



Multi-Stage MILL

. . . granulates uniformly and increases yield by minimizing fines.

LIVE BETTER ELECTRICALLY

ALLIS-.

For Inquiry Code Numbers, See Master Index on Page 361

Work Together

...to upgrade products
...increase production
...cut operating costs

It takes more than proper processing equipment to give you maximum plant efficiency and product quality. It requires the consideration of overall plant design . . . the well-calculated arrangement of processing machines in relation to each other. It includes the careful coordination of associated electrical equipment.

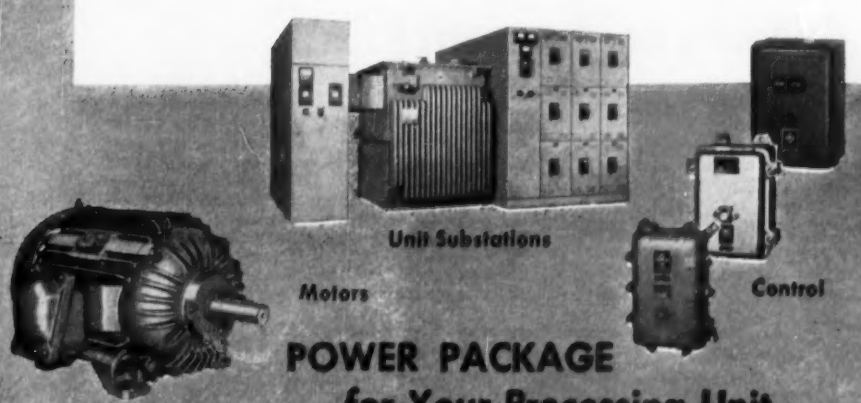
You get **MORE** advantages when you specify Allis-Chalmers, because:

- Coordinated units and processes evolve from a cooperative engineering effort.
- New as well as existing equipment is integrated to deliver a smooth, profitable flow.
- Allis-Chalmers assumes undivided responsibility for efficient performance of equipment.
- No other company has the experience Allis-Chalmers has gained in more than a century of solving equipment integration problems.
- Allis-Chalmers maintains complete laboratory and pilot-plant facilities.
- Service from Allis-Chalmers does not stop when your equipment is installed — check-ups, maintenance advice, fast parts service are yours for the life of the equipment.

Allis-Chalmers Builds the Following "Coordineered" Equipment:

HEAVY	1	Crushers Grinding Mills Screens
PLANT		Compacting Mills Roller Mills Screens
PYRO-PROCESSING	3	Furnaces Kilns Coolers Dryers
POWER	4	Generators Condensers Pumps Transformers Switchgear Substations Motors V-belt Drive Control
LIQUID HANDLING	5	A complete line of Centrifugal Pumps
AIR & GAS HANDLING	6	Centrifugal Blowers Axial Compressors Rotary Compressors

Allis-Chalmers also makes equipment for solvent extraction, electronic heating, metal detection and inter-floor conveying.



POWER PACKAGE
...for Your Processing Unit

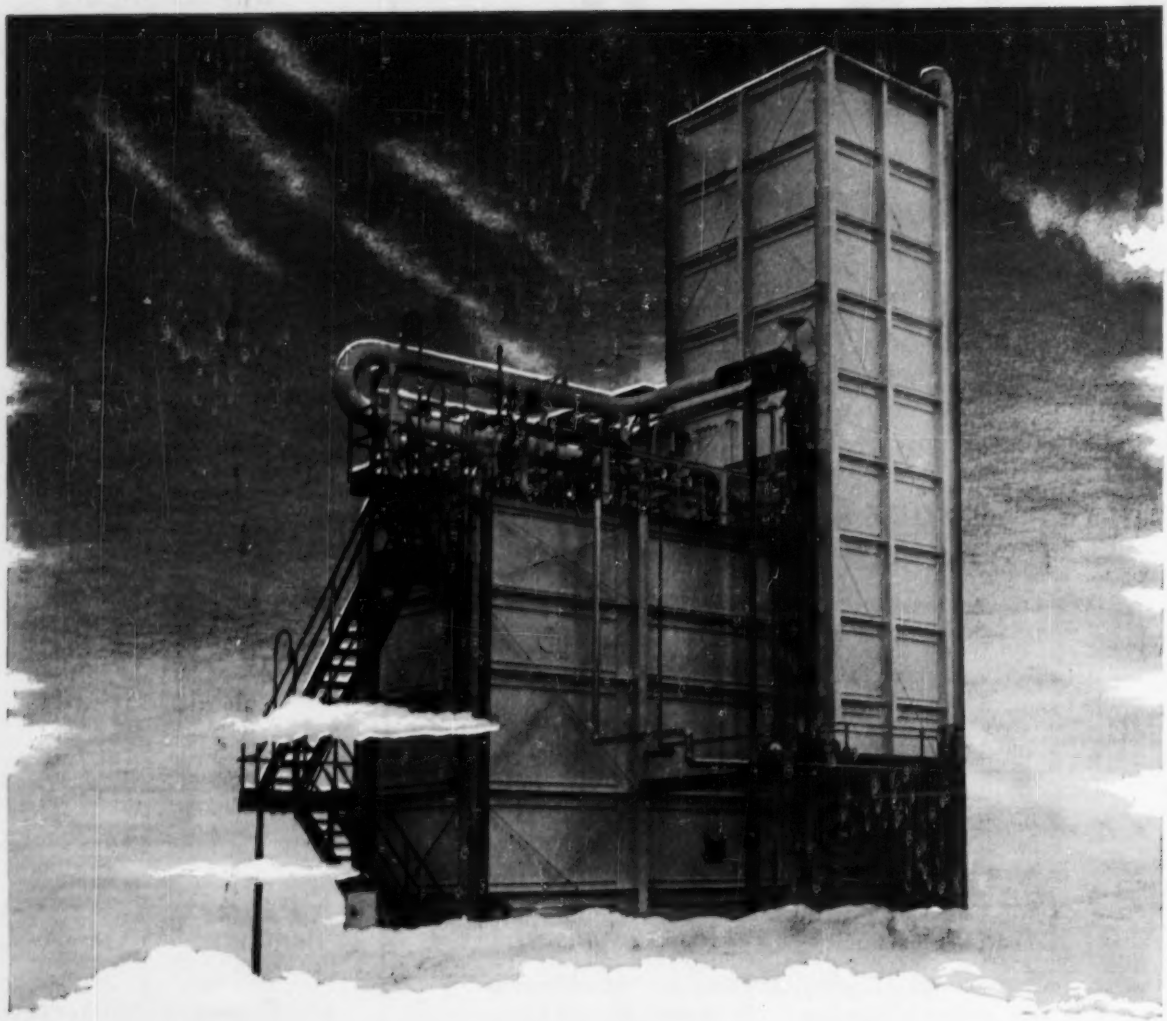
Bulletin 25C6177 covers all Allis-Chalmers equipment for the process industries. Bulletins on specific equipment lines are also available. See your Allis-Chalmers representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

CHALMERS

A-C ALLIS-CHALMERS

A 5078

For Inquiry Code Numbers, See Master Index on Page 361



This plant's stockpile is worth millions--yet it doesn't cost a cent!

The "wild blue yonder"—the free and limitless atmosphere—is the stockpile for Air Products Oxygen (and/or Nitrogen) Generators. There are no delivery problems for this inexhaustible raw material. There are no price fluctuations and no shortages to trouble the owners of these plants.

The method is basic. The production of oxygen and nitrogen from air is accomplished by "Low-Temperature Processing". The air is liquefied by refrigeration and the nitrogen is drawn off at its boiling point (fractional distillation) leaving the pure oxygen product.
Your own "On-Location" Generator can provide you with a continuous supply of oxygen regardless of your requirements—including moderate to large tonnage users. We will furnish and install a complete facility at no capital investment on your part—on a lease basis including a purchase option. If you prefer, we will operate and maintain the facility and guarantee your oxygen savings.

Send us details regarding your requirements and expected future needs. We will then give you a realistic estimate of the savings you can expect with an Air Products Generator installed in your plant.

LOW COST OXYGEN-NITROGEN

Air Products
INCORPORATED
Dept. D Box 538, Allentown, Pa.

More than 800 successful installations

TECHNICAL LITERATURE

Separators, Air—
Thickeners

Separators, Air.....40 to 400 mesh output upped as much as 300%. Sizes range from 3 to 18 ft. in diameter. Company makes available product bulletins on separators as well as other equipment.
297g Sturtevant Mill Co.

Separators, Entrainment.....For complete liquid-vapor separation use Metex Mist Eliminators . . . in vertical tube evaporators, packed columns, distillation columns. For complete details, request Bulletin ME-6.
325 *Metal Textile Corp.

Separators, Laboratory..... Company manufactures new laboratory machines which aid chemical process research and development. Complete technical information on these laboratory separators available.
331A Superior Separator Co.

Shell-Ice Makers.....If you need broken ice for any purpose—process work, storage, food service or shipping—the facts about Shell-Ice will pleasantly surprise you. Request copy of Frick Bulletin No. 54.
331B Frick Co.

Sieves, Molecular.....Dry your gases—air, hydrogen, chemical streams—more thoroughly than any other commercial absorbent. For details, request data sheets on "Drying of Gases" now available.
331C Linde Air Products Co.

Strainers..... Rockwell-built Edward strainers for low-cost high performance . . . efficient, inexpensive protection for gages, meters, regulators, valves, etc. Request your copy of Catalog Section No. 12-T.
331D Edward Valves.

Strainers.....Contains photographs, descriptions, dimensions, capacities, installations and pertinent engineering information on automatic, manual and twin basket strainers. Request Bulletins 500-1-2-3-4-5-6-10-15.
331E S. P. Kinney Engrs.

Strainers.....Feature positive and 100% continuous fluid cleaning. Cuno Auto-Klean Strainer is the only fluid cleaner on the market that works uninterruptedly. Request copy of Auto-Klean Bulletin.
331F Cuno Engrg. Corp.

Strainers, Fine Screen.....Yarway fine screen strainers are available in iron or steel with rust-resistant finish, also bronze, stainless steel and aluminum. Complete data on features in Strainer Bulletin S-204.
331G Yarnall-Waring Co.

Submerged Combustion Units.....New 8 p. fully illustrated Bulletin describes line of Submerged Combustion Equipment. Covers versatility of this unique process tool as applied to a variety of process problems.
331H Ozark-Mahoning Co.

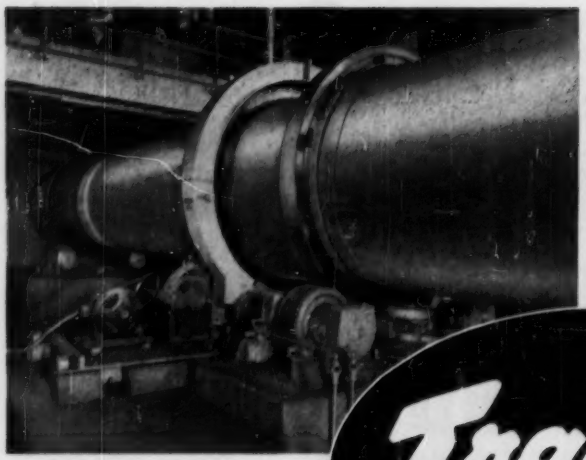
Tables, Concentration.....Separate materials into bands & handle coarsest sands with excellent results. Ideal for separation of groups of particles having similar range of specific gravities. Bulletin T1-B3.
331I Denver Equipment Co.

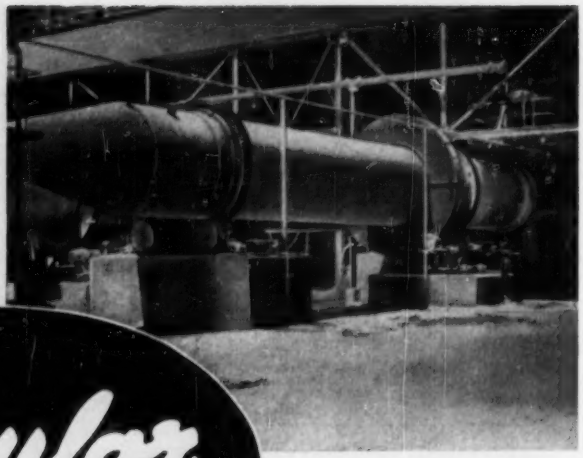
Tank Equipment.....Issues a new general catalog covering tank equipment, gas control, safety devices, automatic controls, electronic remote liquid level gaging and pulse code telemetering systems. Varec Catalog No. P-7R.
331J Vapor Recovery Systems Co.

Thickeners.....The higher the solids content in the thickener underflow, the lower the cost of filtering for subsequent processing or disposal. Complete specifications on the "Auto-Raise" in Bulletin 31-D-11.
331K Hardinge Co.

*From advertisement, this issue.



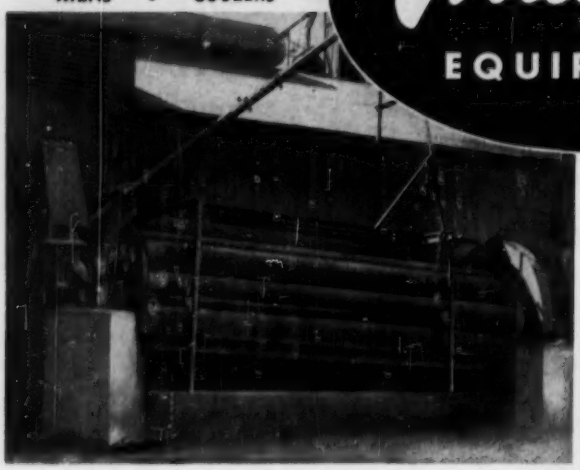


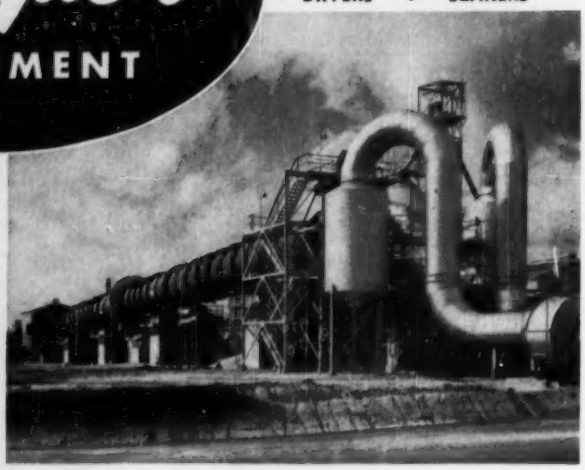


KILNS • COOLERS

Traylor EQUIPMENT

DRYERS • SLAKERS





famous throughout the Process Industries for Improving Quality and Reducing Production Costs

For over a half-century leaders in the chemical processing industry have relied on Traylor Equipment to achieve higher product quality, lower production costs and reduced maintenance bills.

In the past 14 years alone, Traylor has built an average of over 1 Rotary Kiln a month. Today, more than 175 "Traylor-Made" Rotary Kilns are engaged in the processing of over 21 different products. Custom-engineered to individual specifications, "Traylor-Made" Rotary Kilns have been built to 12′ in diameter and 450′ in length.

Traylor Dryers, Coolers and Slakers embody many of the same construction features as Traylor Rotary Kilns. They are equally famous for the production economies they achieve.

For full specifications and description of a Traylor-Made Rotary Kiln, Cooler or Slaker best suited to your particular processing operation, write for a copy of Traylor Bulletin #1115 outlining features of these machines for the processing industry.

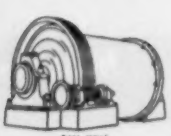
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855 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York · Chicago · San Francisco
CANADIAN MFRS: Canadian Vickers, Ltd., Montreal, P.Q.

A Traylor LEADS TO GREATER PROFITS


PRIMARY GYRATORY CRUSHERS


ROTARY KILNS


SECONDARY GYRATORY CRUSHERS


BALL MILLS


JAW CRUSHERS


APRON FEEDERS

TECHNICAL LITERATURE

Traps, Pumping & Lifting—
Wire Cloth & Screen

Thickeners, Continuous.....Uses—washing slurry to remove impurities, especially from slow settling materials; thickening prior to filtration; thickening instead of filtration; decantation involving "fines." Bul. 122.
315d *T. Shriver & Co.

Towers, Scrubbing....."Buffalo" Hydraulic Scrubbing Tower for high collection efficiency, freedom from clogging and resistance to heat, corrosion and abrasion. For further information, request Bulletin AP-525.
346d *Buffalo Forge Co.

Traps, Pumping & Lifting.....Brochure describes the Johnson Electrap for: pumping service; lifting service; vacuum service (draining vacuum line). Covers operation, features, capacities, etc. Bulletin No. ET-2.
333A Johnson Corp.

Trays, Bubble.....Glitsch "Truss-Type" bubble trays serve all processing plants . . . chemical—petro-chemical—natural gasoline—petroleum refining—AEC—etc. For details, request Technical Bulletin.
333B Fritz W. Glitsch & Sons

Trays, Dryer.....Toteline's fiberglass resin reinforced Dryer Trays resist non-oxidizing acids, corrosive salts, weak alkalis, and many other chemicals. Offers complete information on all Toteline models.
333C Molded Fiberglass Tray Co.

Vents, Non-Conservation.....Storage tank installation at eastern by-product benzol plant combines: maximum air-flow capacities; positive fire protection; low-cost maintenance. Request "Venting Fundamentals."
333D Protectoseal Co.

Vessels, High Pressure.....Cole can build you the kind of high-pressure tanks or vessels you require . . . any size, any shape, any metal. For complete product information, request copy of catalog, "Tank Talks."
333E R. D. Cole Mfg. Co.

Vessels, Pressure..... Developed by specialists producing pressure vessels, vacuum tanks, towers, reactors, weldments and sub-assemblies. Request this easy-to-read, illustrated booklet, "Facilities and Products."
333F Newport News Shipbuilding.

Water Softeners.....One operation, rapid Zeolite water softeners. Completely automatic, semi-automatic or manual controls. Company announces the availability of descriptive literature—Bulletin No. 211.
167g Industrial Filter & Pump.

Wire Cloth.....80 p. catalog describes company's facilities for fabricating wire cloth parts. Includes wire cloth parts for screening, filtering and special uses. Also provides helpful metallurgical information.
333G Cambridge Wire Cloth Co.

Wire Cloth.....Produces standard replacement or custom-designed filter leaves or units, strainers, screens, trays, baskets, cylinders, semi- or complete process apparatus of any size, any shape, any metal. For desired metal. Catalog No. 50.
331e *Multi-Metal Wire Cloth Co.

Wire Cloth.....Newark wire cloth is made of all malleable metals such as aluminum, brass, bronze, phosphor-bronze, copper, monel, Nichrome, Nickel, stainless steel, gold, etc. Request new Catalog E.
333H Newark Wire Cloth Co.

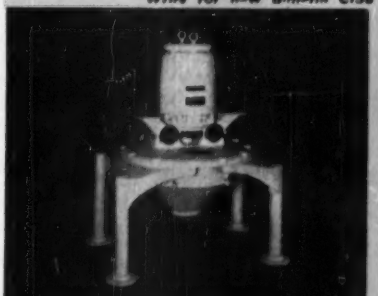
Wire Cloth & Screen.....In order to improve your filtering, straining, sizing operations, specify Ludlow-Saylor wire cloth & screen. Give better resistance to heat & pressures. Condensed Screen Reference Catalog.
333I Ludlow-Saylor Wire Cloth Co.

* From advertisement, this issue.

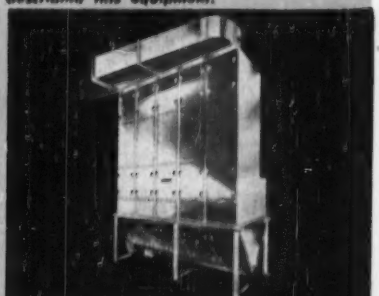
ENTOLETER® EQUIPMENT FOR...

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- DUST RECOVERY

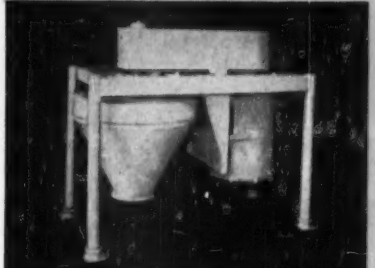
Write for new bulletin C156 describing this equipment.



STANDARD ENTOLETER MIXER...
for complete dispersion of dissimilar, free-flowing solids . . . solid-liquid systems . . . liquids . . . at capacities to 8 tons per hour



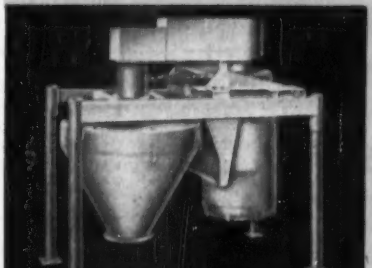
ENTOLETER-SIMON SUCTION FILTER DUST COLLECTOR...
the most economical, high efficiency dust recovery equipment



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for centrifugal mixing or particle size reduction with belt-driven, constant speed or variable speed drive . . . in capacities up to 60 tons per hour.



ENTOLETER ASPIRATOR...
for separation by air, of mixtures consisting of materials of varying density or air foil



ENTOLETER "40"...
for grinding and particle size reduction applications with extreme impact velocities and/or capacities to 100 tons hourly.



PNEUMATIC CONVEYING...
simplicity of design, and choke-free operation and low power requirements assure continuous efficiency.

ENTOLETER DIVISION
SAFETY INDUSTRIES, INC.
Formerly The Safety Car Heating and Lighting Co., Inc.
P.O. Box 904 New Haven 4, Conn.

Compressor

Delivers at flow rates needed for instruments. (334A)

. . . New two-stage centrifugal compressor is claimed first that produces pressures needed for instrument air systems at the low flows required. All other centrifugal compressors require considerably higher maximum flow rates in order to compress air to 50 psig. range. Air from new 2-stage compressor is completely oil free.—*Sawyer Bailey Corp., Buffalo, N. Y.*

Compressor, Centrifugal

New 500 to 65,000 cfm. line. (334B)

. . . Centrifugal compressor line newly announced ranges in size from 500 to 65,000 cfm. This new line is expected to augment manufacturers established line of reciprocating compressors serving transmission line, refineries, and petrochemical plants.—*Cooper-Bessemer Corp., Mt. Vernon, Ohio.*

Fan, Centrifugal

Designed for top efficiency, minimum noise. (334C)

. . . The Chicago line of centrifugal fans for a wide range of industrial applications now is built to a new design. Fans are adapted for handling hot air and gases up to 600 F. They are ideal for drying ovens.—*Chicago Blow Corp., Franklin Park, Ill.*

Laboratory, Slurry Testing

Forestalls booby traps in slurry systems. (334D)

. . . Morris Machine Works now operates a slurry test laboratory. Here, flow characteristics of a given slurry are checked out thoroughly in a system of test loops before pump and pipe sizes are recommended to do the job most efficiently. Calculations have been developed for scaling up reliably from test data to commercial size where it exceeds test loop size. Already, data from the laboratory indicates conclusively that rule of thumb methods for applying slurry pumps are highly inaccurate. Each slurry appears to have its own peculiar traits which can be established only through actual test.—*Morris Machine Works, Baldwinsville, N. Y.*

Pump, Acid

For submersible duty. (334E)

. . . Now available through U. S. representative is the Rheinhutte submersible centrifugal acid pump with vertical shaft. For broad application, this unit is especially suited for pumping acids or slimy liquids from containers, tanks, pits, etc.—*Neumann & Weaver, Inc., Fair Lawn, N. J.*

Pumps, All-Purpose

Fabricated at Teflon. (334F)

. . . With all wetted parts made of solid Teflon the Model 100-C diaphragm pump is completely inert to all chemicals and solvents but molten alkali metals and fluorine at elevated temperatures and pressures. Unit operates from —50 to 300 F.—*O.K. Machine & Tool, Inc., Waco, Tex.*

Pumps, Alloy

In standard line at lower cost. (334G)

. . . A series of centrifugal pumps of "high-alloy" Illium G material is now offered for immediate delivery. Illium G is a nickel-chromium-molybdenum alloy, contains 91.4% of the corrosion-resistant alloying constituents. Iron content is only 6¾-7¼%.—*Ampco Metal, Inc., Milwaukee, Wis.*

Pumps, Canned

New leakproof pump design lowers prices, widens use. (334H)

. . . A new canned pump has, as have previous models, all rotating elements sealed within one enclosure but is simpler and costs less because it does not have the conventionally numerous machined cast parts. It can handle a much wider range of corrosives, service life is increased greatly, elimination of rotating shaft seals makes possible a standard operating speed of 3,450 rpm.—*Chempump Corp., Philadelphia* 18, *Pa.*

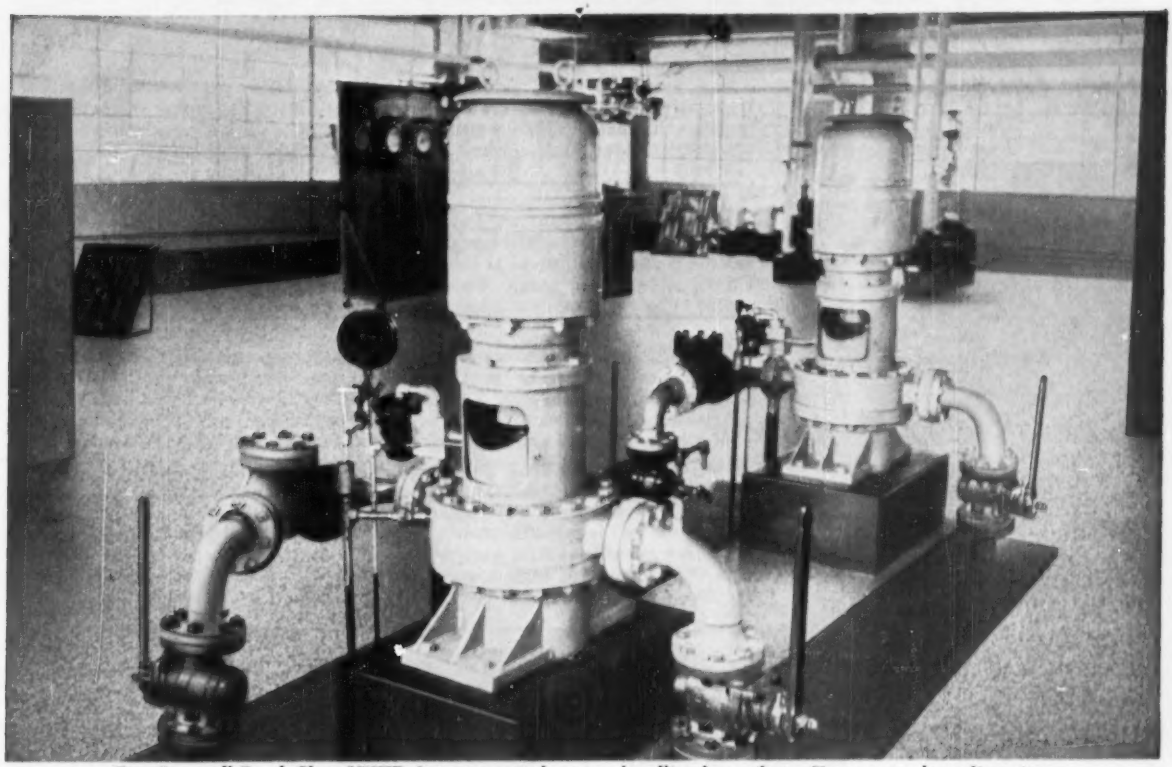
Pump, Canned

Completes prolonged run handling high-temperature liquid metal. (334I)

. . . This mechanical liquid metal pump has just completed a successful 500-hr. performance run at more than 1,000 F.—claimed to be the highest temperature level at which a pump of this type has ever operated for an extended period. Production models of the pump for temperatures up to 1,600 F. will be applied to nuclear power plants, chemical process lines and other applications that require high-temperature heat-transfer mediums. Capacity ranges up to 5,000 gpm.—*Westinghouse Electric Corp., Pittsburgh, Pa.*

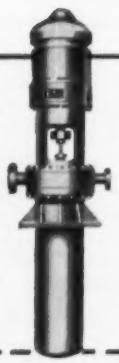


VERTICAL PUMPS



Two Ingersoll-Rand Class VHTB 6-stage vertical pumps handling lean oil at a Texas natural gasoline plant.

to lower your pumping costs



CLASS VHTB
Pressures: to 1500 psi
Capacities: 25 to 325 gpm
Temperatures: to 750°F.

Vertical, multi-stage diffusor-type unit. Single-suction impellers mounted back-to-back for axial hydraulic balance. Stuffing box under suction pressure.

For low capacities at high heads on process, boiler feed, hydraulic and similar applications.



CLASS VP
Pressures: to 750 psi
Capacities: 10 to 350 gpm
Temperatures: to 750°F.

Vertical, multi-stage, diffusor-type construction. Single-suction impellers with throttling sleeve balancing device to reduce axial thrust and provide suction pressure at stuffing box. Entire pumping element removable without disturbing suction and discharge piping.

For low capacities at medium high heads on applications such as process, boiler feed, and heater drain work.

Designed specifically for low-capacity high-head applications, these Ingersoll-Rand vertical process pumps are engineered with a background of process pump experience. They are manufactured in the most modern of pump plants to deliver years of efficient service with a minimum of down time and maintenance expense.

Features include: "Double-Case" construction with segmented diffusor-type inner casing for complete radial hydraulic balance and minimum bearing wear... Positive aligning feature for perfect positioning of inner casing segments... Rotor assembled without prestressing shaft to eliminate all possibility of shaft distortion. Available in bronze fitted, all iron, carbon steel, and stainless fitted materials to cover a wide range of process services.

Ask the Ingersoll-Rand engineer to show you these and other features which make Ingersoll-Rand pumps your best bet for low cost year-in, year-out service.

Ingersoll-Rand

10-376 **11 BROADWAY, NEW YORK 4, N.Y.**

COMPRESSORS · GAS & DIESEL ENGINES · AIR & ELECTRIC TOOLS · CONDENSERS · PUMPS · ROCK DRILLS · VACUUM EQUIPMENT

Pump, Centrifugal

Unique new impeller design. (336A)

. . . A completely new, patented centrifugal pump has a diverging type impeller that handles liquids with high concentrations of solids, air and gases. Unique design prevents vapor binding, avoids clogging, makes the pump self-venting and self-regulating.—*Ingersoll-Rand, New York, N. Y.*

Pump, Centrifugal

Self-priming for sump, unloading. (336B)

. . . Introduced as an integral part of Worthington's standard line of end suction centrifugal pumps is the Type CNGK self-priming pump. Outstanding is an exclusive removable recirculation port. It is designed for packed stuffing box or mechanical seal.—*Worthington Corp., Harrison, N. J.*

Pump, Centrifugal

Interchangeable parts make one pump into seven. (336C)

. . . Every part except three of a new line of seven standard centrifugal pumps are interchangeable. The three parts—impeller, casing and back head cradle—vary the size and the capacity of the seven pumps. A single cradle combination assembly converts any one of the seven pumps to any other one as long as two size back head cradles, seven casings and seven impellers are stocked.—*Dean Bros. Pumps, Inc., Indianapolis, Ind.*

Pump, Centrifugal

Delivers double capacity at twice the head previously possible. (336D)

. . . Based on the manufacturer's long operation experience with pumps, this centrifugal pump is engineered for a maximum 70% efficiency. This means double the head pressure and capacity for a given horsepower and size than had previously been possible.—*Bart Laboratories, Belleville, N. J.*

Pump, Centrifugal

Operates efficiently over broader range of service conditions. (336E)

. . . A new centrifugal pump, Model BL, offers the user more flexible pumping at high efficiency. Each size is said to handle a wider-than-usual range of pressures and capacities, will accommodate fluctuations in either pressure or capacity without serious loss of efficiency. Comes in 2, 3, 4, 5 and 6-in. sizes. — *Gardner-Denver Co., Quincy, Ill.*

Pump, Controlled

Instrument-adjusted. (336F)

. . . Stroke length of a controlled-volume pump now can be controlled by tieing pump into pneumatic process control systems. Solves specific low-capacity flow-control problems.—*Milton Roy Co., Philadelphia, Pa.*

Pump, Controlled

Meters against negative discharge pressure. (336G)

. . . Based on a unique pumping concept, the new Minus Delta P controlled volume pump meters low capacity flow from high inlet to lower discharge pressure. The units are immune to any pressure variations in the system. All that's required is that inlet pressures be at least 5 psi. above discharge pressure.—*Milton Roy Co., Philadelphia, Pa.*

Pump, Double-Ended

For hard-to-handle liquids. (336H)

. . . A recent variation of the Chempump design is the 3-hp., Series DE, double-ended unit. Basically, it is a two-stage pump. Liquid ends can be connected in series or parallel for remarkably compact high head or high volume pumping of process liquids. —*Chempump Corp., Philadelphia, Pa.*

Pumps, High-Pressure

Use 30% less power. (336I)

. . . A new series of high pressure, reciprocating plunger pumps for pressures up to 50,000 psi. require 30% less power than that normally required. Lower horsepower requirement for these controlled-capacity pumps means lower first cost for the pump and for the motor and speed reducer. They can handle liquids or slurries that are free-flowing, viscous or tarry; also corrosive acids, alkalis, salts, oxidizing and reducing agents. They can accurately meter the output from 2 cc. per hr. to a maximum of 15,000 gph.—*Philadelphia Pump & Machinery Co., Philadelphia, Pa.*

Pump, Leakproof

Available in many sizes with flexible variations. (336J)

. . . Two new lines of leakless general purpose centrifugal pumps are now available. General design of the Electri-Cand pump is based on the canned motor principle where both the pump impeller and the rotor of the motor rotate in the liquid being pumped. Electri-Cand pumps are built in a fractional horsepower line, C-10, to include motors through 2 hp., and an integral horsepower line, C-11A and 11B, covering motors above 2 hp. Pumps can handle heads to 250 ft., temperatures to 250 F. and capacities to 500 gpm.—*Allis-Chalmers Mfg. Co., Milwaukee, Wis.*

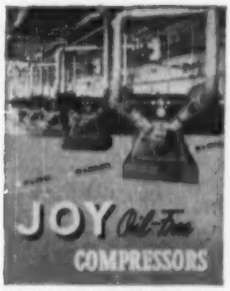
For Your Files—

JOY EQUIPMENT for the CHEMICAL PROCESS INDUSTRIES

Efficient Joy equipment has long been a standard with the chemical process industries—

- **where compressed air must be free of contaminating oil**
- **where ventilation problems reduce production**
- **where corrosive materials or atmospheres ruin standard conveyor idlers in a short time.**

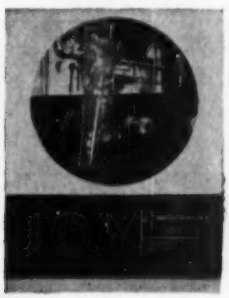
Illustrated here, and free for the writing, are bulletins on this efficient, high-quality Joy equipment. Write today for copies of the bulletins which are of interest to you. ***No obligation, of course.***



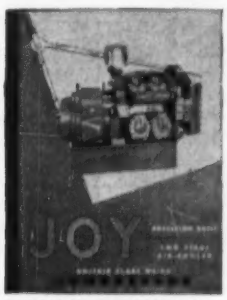
OIL-FREE COMPRESSORS All sizes of OIL-FREE compressors—172 to 8800 cfm; 30 to 150 psi. *Bulletin A-92C.*



AIR COMPRESSORS FOR INDUSTRY Class WN-112, heavy-duty, V-vertical. 368 to 1948 cfm, pressures to 125 psi. *Bulletin A-62C.*



INDUSTRIAL-AIR COMPRESSORS Class WG-9, heavy-duty, vertical design. 172 to 881 cfm, 30 to 150 psi. *Bulletin A-43C.*



UNITAIR COMPRESSORS Class WL-80, two-stage, air-cooled. 81 to 641 cfm, pressures to 125 psi. *Bulletin A-56C*



PACKAGED GAS COMPRESSORS Gas booster compressors for wide variety of pressures and displacements. *Bulletin A-94C.*



AXIVANE FANS Series 1000 adjustable blade, vaneaxial fans for general industrial applications. *Bulletin J-611C.*



LIMBEROLLER CONVEYOR IDLERS Flexible, two-bearing suspension idlers, ideal for handling corrosive materials. *Bulletin LD-103E.*

BULLETINS NOT ILLUSTRATED

WGO-9 OIL-FREE COMPRESSORS Detailed bulletin on vertical design oil-free compressors and component parts. *Bulletin A-44C.*

HEAVY-DUTY AIR COMPRESSORS Class WN-114, heavy-duty, semi-radial design. 1186 to 8800 cfm, pressures to 500 psi. *Bulletin A-72C.*

AIR OR GAS RECEIVERS Built in accordance with ASME standards. 2¾ to 570 cu. ft. capacity, for 23 to 8000 cfm. *Bulletin R-19C.*

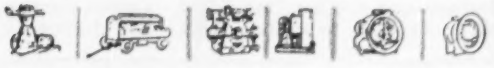
AIR AND GAS AFTERCOOLERS Cool and remove water vapor and oil from compressed air. 125 to 7500 cfm capacity. *Bulletin A-27C.*

Write ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: ***Joy Manufacturing Company (Canada) Limited, Galt, Ontario.***



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for VANEAXIAL FANS • COMPRESSORS • OXYGEN GENERATORS VACUUM PUMPS AND BOOSTERS



WASHINGTON

JOY

SPECIALISTS IN THE COMPRESSION AND MOVEMENT OF AIR AND GASES SINCE 1905

Pump, Leakproof

Handles corrosive abrasive slurries. (338A)

. . . The Hydropulse hydraulic pump system is designed to handle corrosive and abrasive slurries. System is leakproof, delivers a flow substantially free of pulsation. Volume and pressure can be varied within design range while pump is running.—*Scott & Williams, Inc., New York, N. Y.*



Pump, Midget

For corrosive chemical service. (338B)

. . . Midget pump is a new centrifugal pump for chemical and process industries. All bearings are prelubricated. Packing has been replaced with externally adjusted mechanical seals. Capacities from 5 to 40 gpm. with heads from 25 to 160 ft.—*Lawrence Pumps, Inc., Lawrence, Mass.*

Pump, Portable

Transfers acids safely from open vessels. (338C)

. . . Portable pump transfers acids conveniently and safely from open vessels as well as from standard carboys and from drums. Driven by an enclosed electric motor, Centri-F pump delivers approximately 6 gpm. —*General Scientific Equipment Co., Philadelphia, Pa.*

Pump, Pressure Exchange

Handles abrasive, corrosive slurries up to 2,000 psi. (338D)

. . . Maintenance cost slashed more than 95%, initial cost increased only 10-20%—so reports one plant now using the new Hydraulic Pressure Exchange Pump to charge an abrasive, corrosive slurry to high pressure autoclaves. Reason that pump performs so well under difficult conditions is that it has no plungers, plunger packing or stuffing boxes. It can handle corrosive and erosive slurries and solutions at elevated temperature and pressure. Single units are available with capacities up to 120 gpm. discharging at 2,000 psi. Within its range, pump merits consideration where cost of equipment, maintenance and downtime are important. Many jobs of this type now use multi-stage or high-head centrifugals as an expedient or reciprocating pumps despite high operating costs, it is said. The HPE will handle slurries at concentrations up to 40% solids with particles 60 mesh or finer, without trouble. In short, the new Hydraulic Pressure Exchange Pump will handle products that previously could not be pumped economically.—*Manton-Gaulin Mfg. Co., Everett, Mass.*

Pump, Proportioning

Can be adjusted under full load up to 60,000 psi. (338E)

. . . New Microflex, chemical-proportioning pump with a range of discharge pressures up to 60,000 psi. is said to offer longer pump and packing life. Reasons given are that main cross slide is in line with piston cylinder assembly, pistons are floating self-aligning type with shorter stroke length.—*American Instrument Co., Inc., Silver Spring, Md.*

Pump, Slurry

For heavy, continuous duty. (338F)

. . . A new heavy-duty slurry pump, the type RX, handles abrasive slurries of cement, sand, coal, chemical sludges, plant wastes and other products. Available in seven models from 2 to 6-in. size, pump operates at low speed continuously.—*Morris Machine Works, Baldwinsville, N. Y.*

Pump, Slurry

Has positive feed. (338G)

. . . Diaphragm slurry pump with dual-ball check valve design pumps gently, has positive feed and metering traits. Capacity available: ½-5 gpm., 1-10, 2-18.—*Komline-Sanderson Engineering Corp., Peapack, N. J.*

Pump, Submersible

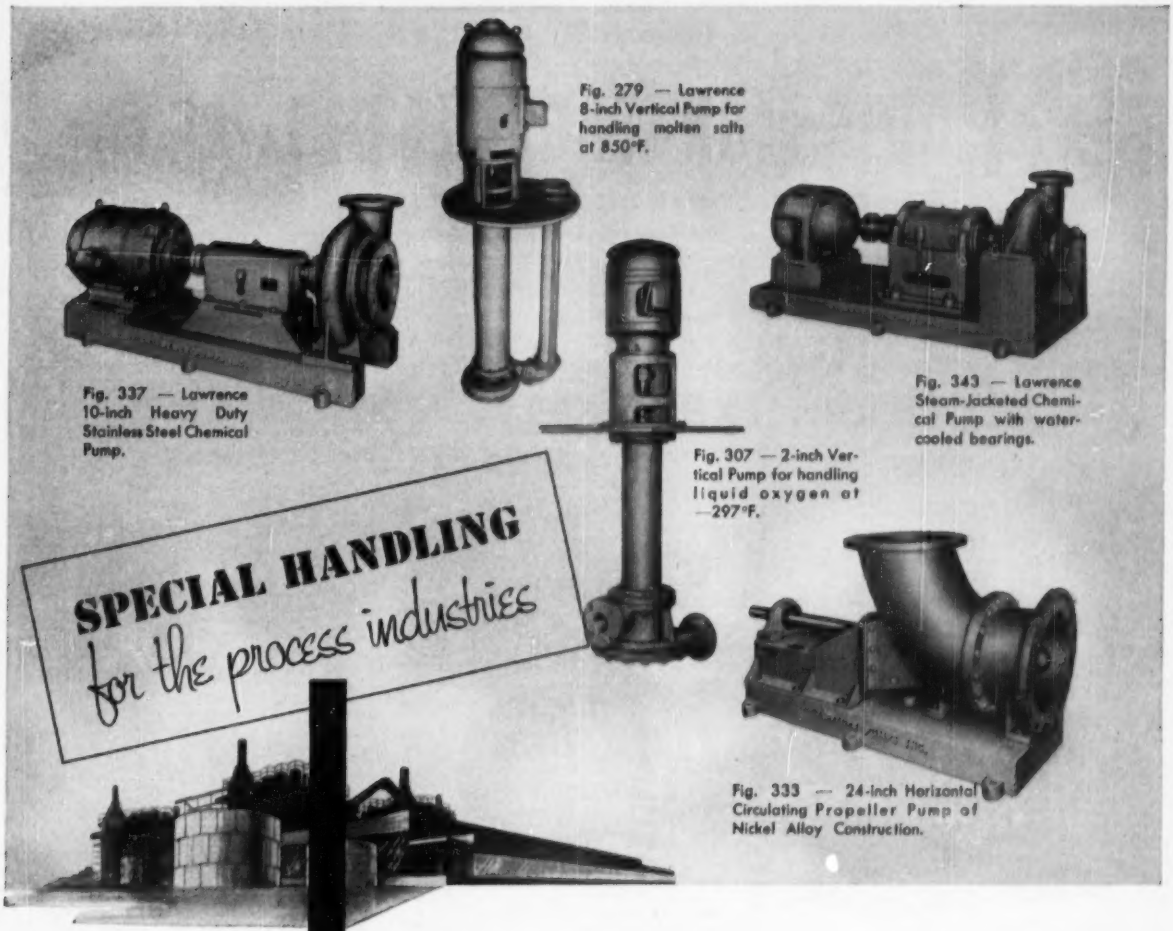
For demanding, booster service. (338H)

. . . Designed to meet industrial requirements, the Verti-Line submersible booster pump is well suited to typical sump, line-booster, fire-protection, and barrel-pumping installations. Models are now available from 5 to 150 hp. with discharge head 50 to 500 ft. and 100 to 4,000 gpm. capacity. —*Layne & Bowler Pump Co., Los Angeles, Calif.*

Pump, Turbine

Mechanical seal aids cold process work. (338I)

. . . Special turbine pump, type Z4, has been developed for cold process applications and for handling liquid ammonia, liquefied petroleum gases and various chemicals. Design incorporates a mechanical seal subject to suction pressure only.—*Aurora Pump Co., Aurora, Ill.*



LAWRENCE PUMPS

handle every fluid that can be pumped - corrosive, abrasive, hot (1500°F) or cold (-347°F)

To pump liquid oxygen, liquid chlorine, mercury, hot sulphuric acid, molten salts, molten metals, heavy abrasive slurries, etc., requires engineering skill normally not available from a pump manufacturer. Lawrence engineers have specialized in this difficult field for more than 90 years. It may almost be said — there is no "pumpable" fluid with which Lawrence engineers have not had repeated and successful experience.

Lawrence Pumps are designed for either horizontal or vertical operation. Every pump is custom built from the corrosion- and abrasion-resistant metals best-suited to the fluid to be pumped.

If you have a particularly difficult pumping problem, we can save you both time and money. Write us the pertinent details. No obligation.



Send for Bulletin 203-7 for a complete summary of acid and chemical pump data.

LAWRENCE PUMPS, INC.

371 Market Street, Lawrence, Massachusetts

ROOTS-CONNERSVILLE BLOWER

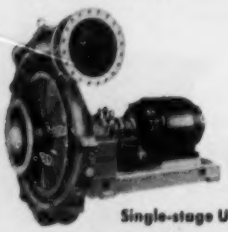
A DIVISION OF DRESSER INDUSTRIES, INC.

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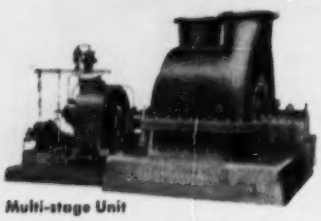
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BLOWERS . . . EXHAUSTERS . . . COMPRESSORS

CENTRIFUGAL



Single-stage Unit



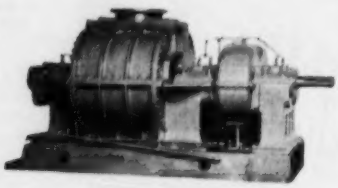
Multi-stage Unit

In the OI type of single-stage units, the impeller is mounted on extended motor shaft. In the OIB type, it is mounted on its own shaft, supported by pedestal bearings.

Type H Multi-stage units are single inlet machines, designed to meet specific conditions. Capacities of each type range from 2,000 cfm to 100,000 cfm or greater, at highest practical pressures.

Send for Bulletin 120-B-14

ROTARY POSITIVE

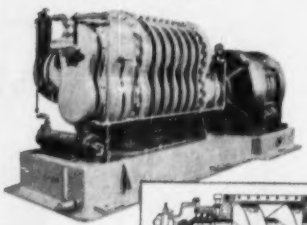


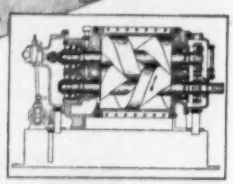


Designed on the "Roots" principle which has proved completely effective since 1854. Displacement per revolution is fixed, to permit accurate control with constant or variable speed drive, which can be of any modern type. All R-C Blowers work equally well under suction or pressure or both. Capacities from 5 cfm to 50,000 cfm.

Bulletin AF-154 on small sizes
Bulletin RB-154 on large sizes

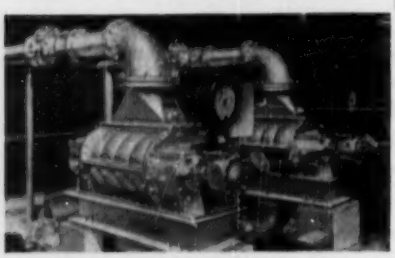
SPIRAXIAL®



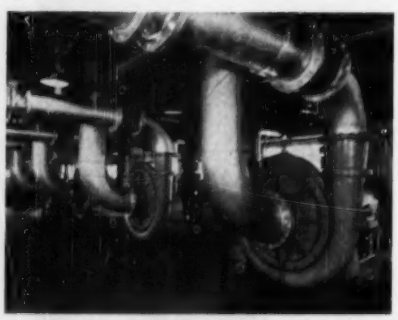


Using internal compression, with screw rotors, the new R-C Spiraxial Compressors operate at much higher efficiencies than ordinary types. Capacities from 700 cfm to 5,000 cfm, at pressures from 15 psi to 30 psi or higher. Within the range of their applications, they have proved highly economical in varying applications.

Details in Bulletin SC-354



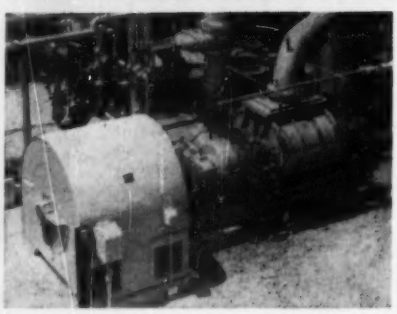
Outdoor meter installation for Knoxville Utilities Board, measuring gas to an industrial user. Capacity of each meter is 60,000 cfh. Equipped with gear boxes and volume and pressure gauges.



Installation of four OIB Centrifugal Blowers at Cabot Carbon Company, Franklin, La. This is one of several Roots-Connersville installations by this company. Capacity of each unit is 10,330 cfm.



Part of an installation of four R-C Rotary Blowers in the FluoSolids Plant at the Yerington Mine of the Anaconda Company, Weed Heights, Nevada.

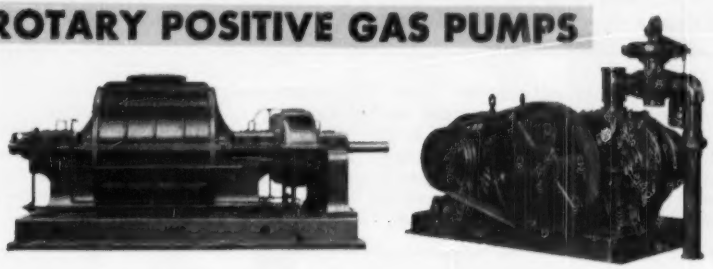


Battery of two RCXH Gas Pumps at Mississippi Chemical Corporation, Yazoo City, Miss. Capacity of each pump is 8,660 cfm of .321 specific gravity gas.

ROOTS-CONNERSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.

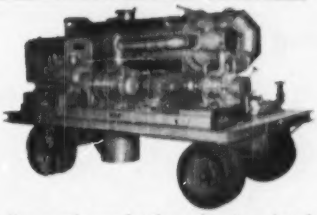
ROTARY POSITIVE GAS PUMPS



The positive displacement principle maintains constant volume of gas with each revolution, to assure accurate control at outlet or inlet, which is required in many applications. Capacities from 5 cfm to 50,000 cfm at moderate pressures in the smaller sizes and up to 15 lbs. differential in the larger units.

Request Bulletin 31-B-17 on small sizes and Bulletin 32-33-B-13 on large sizes

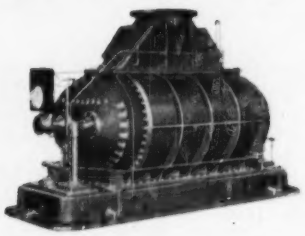
INERT GAS GENERATORS



Frequently pay for themselves in reduced insurance premiums, as protection against fire and explosion hazards. Economical to operate, with oil or gas engines or electric motors. Available in mobile type (illustrated) or stationary units, from 1,000 cfh to 100,000 cfh.

Send for new Bulletin IGG-155

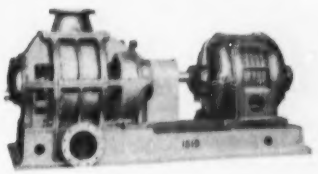
POSITIVE DISPLACEMENT METERS AND VACUUM PUMPS





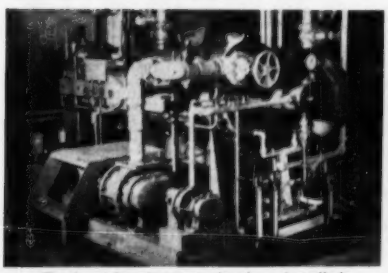
Positive displacement principle, with no small parts, assures long-time accuracy in any capacity, from 4,000 cfh to 1,000,000 cfh. Plant prover-tests available if desired. Small space requirements reduce installation costs over other types. Practically no operating or maintenance costs.

Ask for Bulletin M-152

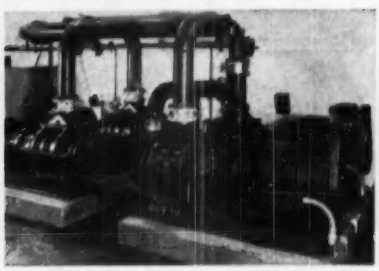


Operating at high speed (514 rpm or higher), R-C Vacuum Pumps show substantial reductions in both first cost and operating cost. Compact for small space, with low-cost foundations. Single and 2-stage units from 500 cfm to 13,000 cfm at vacuums up to 27" Hg.

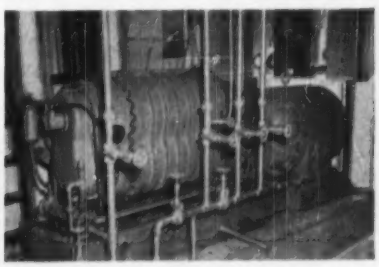
Ask for Bulletin 50-B-13



This Inert Gas Generator has been installed since 1942 at what is now Spencer Chemical Company at Pittsburg, Kansas. It is an 18,000 cfh, variable type capacity unit, with special gas line equipment.



These RCV Vacuum Pumps first were installed in 1946 in an industrial plant. They were acquired in 1950 by the National Bureau of Standards, Washington, for the Combustion Controls Section, where a battery of R-C Centrifugal Blowers also is in use.



This Spiraxial® Compressor is used in low pressure oxidation service for processing wax products at the Chanute, Kansas Refinery of the Warwick Wax Company, Inc., a subsidiary of Sun Chemical Corporation.

LOOK TO ROOTS-CONNERSVILLE BLOWER FOR MODERN METHODS OF PUTTING AIR OR GAS TO WORK MORE EFFECTIVELY

Industrial progress has brought many changes in the use of air and gas for processing. Often in these new developments, the long, specialized experience of Roots-Connersville designers and engineers has proved especially valuable. Those who use air or gas in their own manufacturing operations, or suppliers who build equipment for others to use, are invited to consult with our Product Development Department for cooperation in the more effective, practical and profitable use of gas and air.

ROOTS-CONNERSVILLE BLOWER

1036 Illinois Ave., Connersville, Indiana

In Canada: 629 Adelaide St. W., Toronto 3, Ontario, Canada

Pump, Vacuum

No contamination. (342A)

. . . New Microvac rotary mechanical vacuum pumps combines gas ballasting plus an oil-purging device. It prevents contamination of the pump oil by condensation of system vapor.—*F. J. Stokes Machine Co., Philadelphia.*

Pump for Hot Liquids

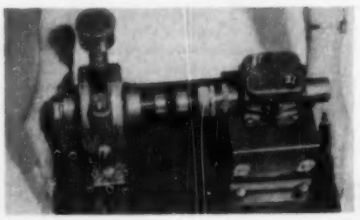
With external heat exchanger. (342B)

. . . Newest addition to the Chempump line of canned-motor pumps can handle Dowtherm, Aroclor, hot fats, hot oils and similar liquids at temperatures as high as 1,000 F. Operation at these elevated temperatures is possible through a special high-temperature design and an external heat exchanger. Model CHS pumps are available in 5 and 7.5 hp. sizes. Also available with high temperature design is model CFT in ¾ and 1½ hp. sizes.—*Chempump Corp., Philadelphia, Pa.*

Pump Unit

For hazardous materials. (342C)

. . . Now available for pumping corrosive and hazardous materials is a new combination of an Eco positive displacement, stainless-steel pump driven by an air motor. Pumping speed is controlled closely by a single manual adjustment. On non-volatile fluids, unit is self-priming. Handles up to 10 gpm. at pressures to 100 psi. —*Eco Engineering Co., Newark, N. J.*



TECHNICAL LITERATURE

PUMPS, BLOWERS & COMPRESSORS

Air Handling Equipment . . . . . Where health, safety and comfort require putting air to work properly, Westinghouse offers you a full line of air moving & air cleaning equipment. Request complete literature.
342D Westinghouse Elec. Corp.

Blowers. . . . . Describes Spencer Turbo-Blowers in sizes up to 250 hp. for step aeration, activated sludge, chamber aeration, air blow-back, washing grit, air flotation of solids & greases, etc. Bulletin 142-B.
342E Spencer Turbine Co.

Blowers. . . . . Exclusive 3-lobe construction provides maximum air in minimum size blower. Requires little or no maintenance. Hundreds of applications. For more complete information, request Bulletin No. 255.
336 *Dexter Folder Co.

Blowers. . . . . Wherever bad air slows down production . . . in shipholds, tanks, drums, boilers or other places where men need fresh air . . . a Coppus blower becomes a necessity. Request complete details.
342F Coppus Engrg. Corp.

Blowers. . . . . Displacement per revolution fixed to permit accurate control with constant or variable speed drive. Works well under suction, pressure, or both. Capacities from 5 to 50,000 cfm. Small sizes, Bul. AF-154.
340-1a *Roots-Connersville Blower.

Blowers. . . . . Precision manufactured to move more gas or air with less wear than other blowers of equal size or weight . . . and with less maintenance and power costs. Describes line in detailed Bulletin B-154.
338 Read Standard Corp.

Blowers. . . . . Displacement per revolution fixed to permit accurate control with constant or variable speed drive. Works well under suction, pressure, or both. Capacities from 5 to 50,000 cfm. Large sizes, Bul. RB-154.
340-1b *Roots-Connersville Blower.

Blowers, Motor. . . . . Describes blowers in 2 series up to 4" static pressure. Available in 1, 2 & 3 fan assemblies. Applicable to ventilating, drying, air conditioning. For details, request Bulletin No. 89.
195j Niagara Blower Co.

Compressors. . . . . Describes Model 20T compressor equipped with Ingersoll-Rand Channel Valve. This air-cooled 20 hp. compressor may be either direct-connected or belt driven. Request fully illustrated Form No. 1540.
342G Ingersoll-Rand Co.

Compressors. . . . . For a description of the vital role played by Ingersoll-Rand compressors in synthetic ammonia production, refer to Form 3223. Process plants of all types use these compressors. Form 3132.
342H Ingersoll-Rand.

Compressors. . . . . Covers new line of air & gas compressors, dry vacuum pumps, check valves, aftercoolers & centrifugal pumps for handling water & aqueous solutions. Request 6 p. Catalog Bulletin No. 603.
342I Pa. Pump & Compressor Co.

Compressors. . . . . Illustrated reference describes Joy WG-9 heavy-duty, vertical industrial compressors. 172 to 881 cfm capacity, with range of pressures from 30 to 150 psi. Covers features, etc. Bulletin A-43A.
337e *Joy Mfg. Co.

Compressors . . . . . Valuable information on Pennsylvania Oilfreair and Oilfregas compressors . . . guaranteed to compress entirely free of any trace of oil or oily vapors. Request illustrated Bulletins 604 and 605.
342J Pa. Pump & Compressor Co.

Compressors. . . . . Engineered for continuous, heavy-duty usage, the Class O Compressor affords complete dependability with low operating cost. Require minimum attention & upkeep. Full information in Bulletin 726.
342K Chicago Pneumatic Tool Co.

Compressors. . . . . Add compressed air power efficiently with the Joy WG-9. Features: full force feed lubrication; "dual-cushion" valves; anti-friction main bearing; etc. Information in Bulletin 22-11.
342L Joy Mfg. Co.

Compressors. . . . . York Freon Turbo compressor systems are particularly adapted to high-capacity refrigeration loads. Company makes available a file folder and reprints on their complete line of compressors.
342M York Corp.

Compressors. . . . . Illustrated reference describes WL-80, unitair, two-stage, air-cooled compressors. 81 to 641 cfm capacity, with pressures to 125 psi. Covers features, specifications, etc. Request Bulletin A-56C.
337d *Joy Mfg. Co.

Compressors . . . . . Describes Allis-Chalmers single & two-stage vane type compressors for shop air, gas handling, drilling & numerous other applications. For full details, request Bulletins 16B8244 & 16B8126.
342N Allis-Chalmers Mfg. Co.

Compressors. . . . . High pressure barrel-type compressor features: simple to maintain—only 1 head bolted on; shaft sealing; rugged rotor—for years of high speed operation; extra strong. Request details of this design.
342O Allis-Chalmers Mfg. Co.

Compressors. . . . . Models TLA & TRA turbo-supercharged compressors are built in 1100-3400 BHP models. Company offers two bulletins which give details on these modern designs. Bulletins 134 & 135.
342P Clark Bros. Co.

Compressors . . . . . RX Compressors are engineered to keep on the go. For complete details on RX models from 89 to 1292 cfm, for pressures from 15 to 150 psi, the company makes Bulletin HAC-40 available.
342Q Gardner-Denver Co.

Compressors, Air. . . . . Add compressed air power efficiently with Joy WN-112 heavy-duty, V-vertical compressors. 368 to 1948 cfm capacity; pressures to 125 psi. Request illustrated reference, Bulletin A-62C.
337b *Joy Mfg. Co.

* From advertisement, this issue.

PROPORTIONEERS



CHEMICAL PROPORTIONING PUMP

Model 1140 Proportioneer						
Discharge Pressures up to	MAXIMUM CAPACITY PER CYLINDER IN GPH* (Minimum feed rate 1/15th of max. cap. by stroke length adjustment)					PRICE
1340 psig.	10.7	13.3	17.8	21.3	26.6	
670 psig.	20.9	26.1	34.8	41.8	52.2	
335 psig.	42.7	53.3	71.1	85.3	106.5	
168 psig.	83.6	104.4	139.2	167.1	209.0	
84 psig.	171.0	213.0	284.5	342.0	426.0	

*Five operating speeds available for various fluid viscosities. For capacities of DUPLEX MODELS (see photo), double the capacities shown in table. If you need capacities and pressures other than these, consult **Proportioneers, Inc.**, manufacturer of the most complete line of proportioning pumps.

Like surprises? Write for Prices!

To **PROPORTIONEERS, INC.**, 369 Harris Ave.,
PROVIDENCE 1, RHODE ISLAND
Division of

B-I-F INDUSTRIES
PROVIDENCE, RHODE ISLAND
BIF METERS FEEDERS CONTROLS

BUILDERS IRON FOUNDRY • PROPORTIONEERS, INC. • OMEGA MACHINE CO. • BUILDERS-PROVIDENCE, INC.

Inquiry Code Number for This Advertisement-343

Pump standardization

1 YOUR CHOICE OF MATERIALS OF CONSTRUCTION



All iron



All bronze



All Worthite



Iron with bronze impeller and trim

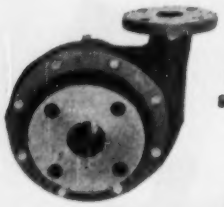


Steel with iron impeller and trim

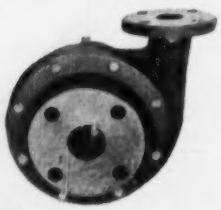


Steel with bronze impeller and trim

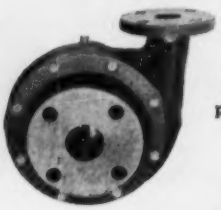
2 YOUR CHOICE OF LIQUID ENDS



With closed impellers for general service



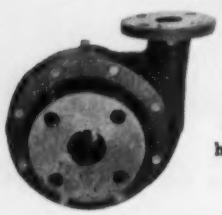
With open impellers for general and abrasive services



With closed impellers for process service



With open impellers for corrosive services



With closed impellers for hotwell service

3 YOUR CHOICE OF SHAFT SEALING METHODS



Stuffing box

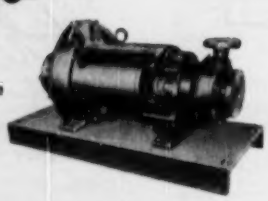


Mechanical seal

4 YOUR CHOICE OF DRIVES

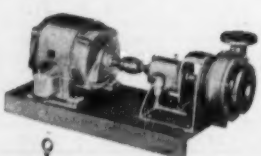


Monobloc Motor



Monobloc Turbine

CLOSE-COUPLED



Direct Motor Drive



Direct Turbine Drive



Belt Drive

FRAME-MOUNTED

Choose from 70,480 combinations. Worthington's SESC – Standard End Suction Centrifugal – line allows you to "custom-build" your pump from stock parts. In each of the 120 sizes, you have a choice of materials of construction, types of liquid ends, shaft sealing methods, and drives. Because the SESC line is built from standard, stocked parts, you get prompt delivery at competitive prices.

slashes inventory, reduces downtime, cuts maintenance

. . . yet gives you 70,480 combinations to choose from

STANDARDIZE AND SAVE! NOT SOMETIME IN THE FUTURE, BUT NOW!

With Worthington's SESC–Standard End Suction Centrifugal–line, you can cut your warehousing and inventory costs as much as 50%, greatly simplify pump maintenance, and reduce downtime.

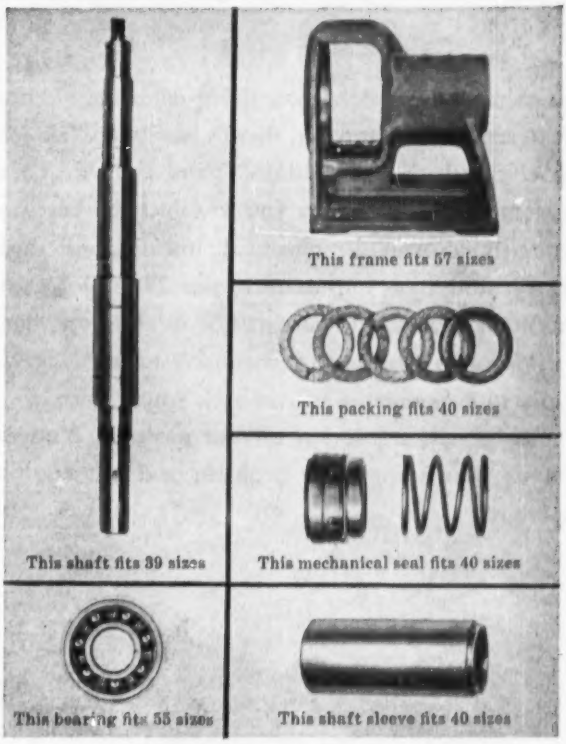
You get these benefits *without* sacrificing flexibility. In fact, the SESC line gives you an even broader selection. Because *parts* have been standardized and not *pumps* you can literally "custom-build" your pump to get exactly the right features for your particular application.

The complete Worthington SESC pump line consists of six separate types, all suitable for either motor, turbine, or belt drive. Ratings range up to 2700 GPM and 230 ft. head. Pumps and spare parts are available from field stock in all strategic areas as well as from the factory.

If you'd like to know more about the SESC line, write to Section PC61, Worthington Corporation, Harrison, N.J. In Canada: Worthington (Canada) 1955, Ltd., Toronto, Ont.

PC-6.1

WORTHINGTON



Slashes parts inventory. You can cut inventory costs as much as 50% by standardizing on the SESC–Standard End Suction Centrifugal–line. In the 120 sizes in the complete line, many, many parts are interchangeable. As shown here, one shaft is used in 39 sizes, one bearing in 55 sizes, one frame in 57, one packing in 40, one mechanical seal in 40, and one shaft sleeve in 40 sizes.



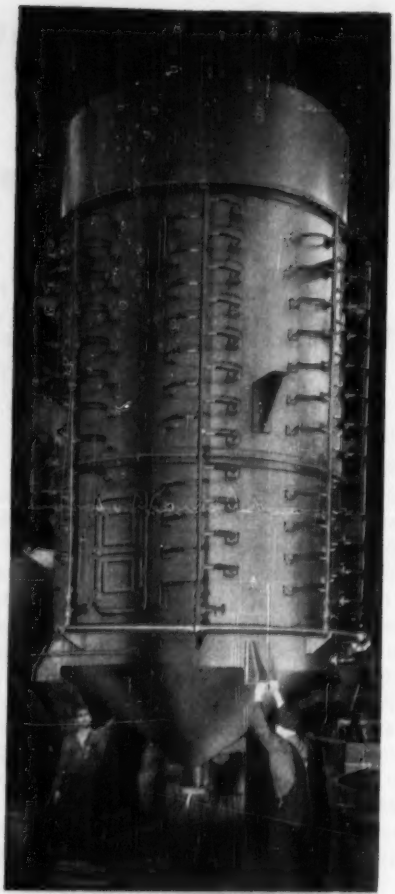
Reduces downtime. Parts interchangeability can mean big savings. When repairs or conversions are necessary, standardization can often drastically cut downtime. For example, all SESC pumps can quickly be converted from packed stuffing box to mechanical seal and vice versa using *stock* parts.

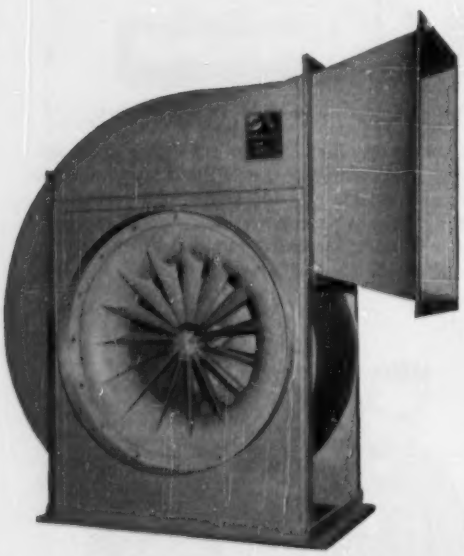


Cuts maintenance. If you know one SESC pump, you know them all. From the smallest to the largest the entire line is built to the same basic design. Maintenance men quickly become familiar with construction details. Their work is simplified and maintenance costs greatly reduced.

FOR AIR HANDLING EQUIPMENT TO MEET YOUR MOST SPECIALIZED REQUIREMENTS

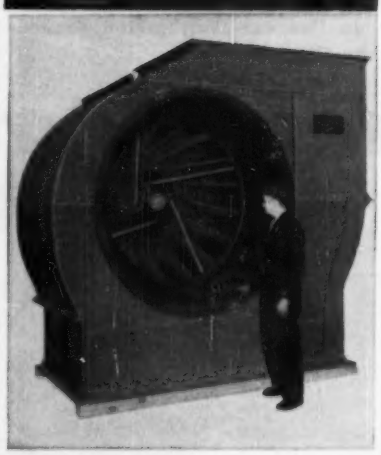
From exhausting fumes, controlling effluents, air processing and draft to straight air moving, there's hardly an "air job" not being done efficiently — by "Buffalo" Fans and Air Cleaning Units. This complete line enables you to select the best possible units, thoroughly proven in chemical installations throughout the industry. And, most important to you, "Buffalo" engineering and manufacturing facilities are ready to develop the increasingly "special" units required by chemistry today. Nearly 80 years of "Q" Factor* leadership in Air back your choice of "Buffalo" for the most practical solution to your problem. You are invited to write us concerning your problem and the equipment needed to solve it.





Left, Type BLH Fan, the last word in high efficiency and quiet delivery, with its complete inlet-to-outlet streamlining. Write for Bulletin F-200 describing this new fan, also Bulletin F-101 describing the long-popular Type BL Fan.

Bottom Right, "Buffalo" Rubber-Lined Fans last 3 to 12 times longer than steel fans on corrosive fume handling. Write for Bulletin 2424-F.



Top, a "Buffalo" Hydraulic Scrubbing Tower for high collection efficiency, freedom from clogging and resistance to heat, corrosion and abrasion. Write for Bulletin AP-525.

**The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.*

BUFFALO FORGE COMPANY

BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING FORCED DRAFT COOLING HEATING PRESSURE BLOWING

TECHNICAL LITERATURE

Compressors, Air—

Pumps

Compressors, Air.....Offers single and two stage air compressors from ½ to 20 hp. Gives details on various models, accessories, engineering data and controls. Write for data sheet, factual booklet & Catalog 36.
347A Brunner Mfg. Co.

Compressors, Air.....Joy WB-114 heavy-duty air compressors include such features as semi-radial design. Have 1186 to 8800 cfm capacity with pressures to 500 psi. For complete information, request Bulletin A-72C.
337i *Joy Mfg. Co.

Compressors, Air.....For any air needs in the 150-4500 hp. range, Clark offers an ultra modern balanced/opposed compressor to fit every application. For complete details, request Bulletin No. 118.
347B Clark Bros. Co.

Compressors, Axial Flow.....Carrier Axial Flow Compressors fill industry's need for a machine of large volume flow capable of operating on any gas mixture. For complete data, request descriptive Folder.
347C Carrier Corp.

Compressors, Centrifugal.....De Laval compressors are designed and built for heavy duty continuous operation. Rugged, horizontally split casings . . . individually designed impellers . . . etc. See Bulletin 0504.
347D De Laval Steam Turbine Co.

Compressors, Centrifugal.....Various models of both single-stage & multi-stage units with capacities from 2,000 to 100,000 cfm or greater, at highest practical pressures. For details, see Bulletin 120-B14.
340-1e *Roots-Connersville Blower.

Compressors, Centrifugal.....Offers a complete line of centrifugals for gas compression and refrigeration—up to 10,000 horsepower in a single unit. Details in booklet, "Centrifugal Compressors for Industry."
347E Carrier Corp.

Compressors & Engines.....Available in a range of sizes from 100 to 5000 hp. Cooper-Bessemer engines & compressors are ready to meet your exact requirements. New product bulletins offer the latest information.
347F Cooper-Bessemer Corp.

Compressors, Oil Free.....Illustrated reference describes all sizes of high-quality, efficient oil-free compressors. 172 to 8800 cfm. capacity; 30 to 150 psi. For complete information, request Bulletin A-92C.
337a *Joy Mfg. Co.

Compressors, Packaged Gas.....Illustrated reference describes gas booster compressors for wide variety of pressures & displacements. Used in gas gathering & lifting, repressuring & in gasoline plants. Bulletin A-94C.
337e *Joy Mfg. Co.

Compressors, Spiraxial.....R-C Spiraxial Compressors, using internal compression, are highly efficient and economical. Capacities from 700 to 5,000 cfm, from 15 to 30 psi or higher. See Bulletin SC-354.
340-1d *Roots-Connersville Blower.

Exhausters.....Complete data on General steel plate exhausters—capacity tables, dimensions, directions of rotation & discharge, standard drive arrangements & engineering design data. 24 p. Bulletin MX-104R.
347G General Blower Co.

Exhausters.....Fully describes Chicago Blower's new Axial Mushroom Power Room Exhausters. Included are performance tables, application information, detailed specifications, etc. Request Bulletin No. CAM-102.
347H Chicago Blower Corp.

Exhausters, Rubber-Lined....."Buffalo" rubber-lined exhausters last from 3 to 12 times longer than ordinary metal fans handling fumes containing corrosive materials. Furnishes details in Bulletin No. 2424F.
346a *Buffalo Forge Co.

Fans.....Exhaust hot, corrosive & explosive fumes the direct way, with no directional change in air stream to cause pressure losses. Bulletin DB-4-52 & "Design Data for Exhaust Systems" sent upon request.
347I American Mach. & Metals.

Fans....."Buffalo" Type BL Limit-Load Ventilating Fan offers the finest features—for quiet, stable, efficient performance in industrial service. Further details in Bulletin F-101, your copy on request.
346b *Buffalo Forge Co.

Fans.....Illustrated, 16 p. on industrial propelier fans. Covers principal dimensions of automatic roof ventilator, direct connected ring type fan, Bi-Flo duct fan, utility man cooler, etc. Bulletin No. IPF 101.
347J General Blower Co.

Fans.....American Blower offers two references describing their Ventura fans. Request Bulletin No. 6514 for Model K Ventura fan, and for Model G, Bulletin No. 6414 gives complete performance data.
347K American Blower Corp.

Fans.....Type BLH Fan is highly efficient and offers quiet delivery, with its complete inlet-to-outlet streamlining. Features the "Q" Factor, quality providing trouble-free satisfaction and long life. Bulletin F-200.
346c *Buffalo Forge Co.

Fans.....Profusely illustrated, 72 p. describes the new Series 106 Industrial Fans which provide complete full-range coverage of industrial air and material handling requirements. Request your copy of Bulletin 5306.
347L American Blower Corp.

Fans.....Makes available a fully illustrated reference describing the newly redesigned, improved line of "Chicago" Axial Airfoil Fans. Explains their function and design in detail. Request Bulletin AA-101.
347M Chicago Blower Corp.

Fans.....The Bifurcator is a direct-driven fan in a divided housing. Fumes bypass the motor which always stays clean, cool & accessible. Installs like a section of duct-work—at any angle. Catalog DB-37-55.
347N Debothezat Fans Div.

Fans & Boosters.....Describes line of stack fans & duct boosters. Includes information regarding advantages, applications, details of construction, dimensions, capacities, etc. in 16 p. illustrated Bulletin No. 109-A.
347-J International Engrg.

Fans, Centrifugal.....Fully illustrated, 32 p. furnishes valuable information on General backward-blade centrifugal fans. Covers installations, design and construction, engineering data, etc. Bulletin No. BB-102.
347P General Blower Co.

Fans, Centrifugal.....Offers high efficiency, low noise level industrial fans. Particularly recommended for handling hot air and gases up to 600° F. Bulletin C-102 makes correct selection quick and easy.
347Q Chicago Blower Corp.

Fans, Exhaust....."Type G" exhaust fan gives high air delivery per horsepower required. Statically and dynamically balanced; designed exclusively for dust control applications. Request Bulletin 471.
171f *Day Co.

Fans, Vaneaxial.....Illustrated, 16 p. describes Series 1060 Axivane adjustable blade, vaneaxial fans for commercial & industrial applications. Covers design, features, specifications, etc. Bulletin No. J-611C.
337f Joy Mfg. Co.

Pumps.....De Laval Oppeller Pumps are available in sizes from 2 to 4 inches & 2 to 8 stages; capacities to 1000 gpm, pressures to 1200 psig & temperatures to 3500 F. Complete details in Catalog No. 1502.
347R De Laval Steam Turbine Co.

Pumps....."Pumping Corrosives" . . . 4 p. article describing the transfer of hydrochloric, formic, lactic acid and salt solutions at Litho Chemical. Company makes article available upon request.
287i *Cooper Alloy Corp.

Pumps.....Vanton's "flex-i-liner" is the answer to the problem of pumping ferric chloride. It operates equally well in either direction, a reversing switch on the motor provides direction change. Cat. VP55.
347S Cooper Alloy Corp.

Pumps.....4 p. Folder describes the Vanton line of Buna "N" and natural hard rubber pumps, valves, pipe and fittings. Also included are tables, charts and other technical data required for proper selection.
347T Cooper Alloy Corp.

Pumps.....A Vanton (no packing—no seals, B-30 pump with a bakelite body block & neoprene flex-i-liner eliminates contamination. Request your copy of Catalog 56C for complete information.
347U Cooper Alloy Corp.

Pumps.....Announces availability of a new Bulletin describing handling of corrosives at Litho Chem. & Supply Co. Covers use of pump for a variety of solutions including hydrochloric, formic and lactic acids.
347V Vanton Pump & Equipment.

Pumps.....Describes oil and mercury booster and diffusion pumps. Unusually easy to maintain—long lived. Give top performance despite variations in operating conditions. Brochure DP2.
352e *National Research Corp.

Pumps.....Describes the Flow-Master pump . . . an exceptionally efficient, precision built, stainless metal rotary pressure pump for transferring and metering. Features and engineering data. Catalog No. 25C.
347W Marco Co.

Pumps.....Makes available a new edition of the "Handbook of Hydraulic Tables and Other Engineering Data," 28 p. reference work for hydraulic engineers interested in pumping & piping problems. Bulletin 50.
347X Aldrich Pump Co.

Pumps.....Capacities to 150 gpm & heads to 600 ft. Apco is the highest development of the turbine-type pump. These pumps are suited to "1001" duties. For full information, request Bulletin 111 & Catalog M.
347Y New York Air Brake Co.

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* From advertisement, this issue.

TECHNICAL LITERATURE

Pumps—

Pumps, Centrifugal

Pumps.....16 p. reference illustrates and describes products from the company's full line of vacuum and liquid pumps, air brake equipment, and hydraulic motors, controls and pumps. Request Brochure No. 1102.
348A New York Air Brake Co.

Pumps.....Series H Durcopumps, built for continuous operation with maximum service & minimum maintenance, use just three bearing housings & shafts. Available in eleven standard alloys. Bulletin P/Sa.
348B Duriron Co.

Pumps.....Ingersoll-Rand motorpumps have well-balanced impellers and precision machined parts help provide peak performance and smooth operation on every job. Request the latest Motorpump Catalog for details.
348C Ingersoll-Rand.

Pumps.....Oil-lubricated pumps offer simple design—yet have all features required for low cost, low maintenance operation at high temperatures. Covers design & construction features in Bulletin No. 52B7638.
348D Allis-Chalmers Mfg. Co.

Pumps.....New fully illustrated booklet contains the construction features of the "ACAP" pump for handling solids in suspension under variable capacity and head conditions. "ACAP" Pump Bulletin 08B8328.
348E Allis-Chalmers Mfg. Co.

Pumps.....Viking pumps deliver non-leak operation and positive pumping. Company makes available a bulletin which gives complete details on its product line. Request Bulletin Section Hc.
348F Viking Pump Co.

Pumps.....If you have a problem where metering, blending or other accurate pumping of liquids is concerned, let Viking help solve it. Use Viking Pumps for accurate pumping. Request information & Bulletin 568c.
348G Viking Pump Co.

Pumps.....Selected sizes of B & G series 1522 and 1531 centrifugal pumps are stocked at the factory for immediate shipment. Capacities to 225 gpm, heads to 140 ft. Price and Selection Catalog.
348H Bell & Gossett Co.

Pumps.....Taber pumps are built for handling chemical solutions, efficiently & economically . . . in the processing industries. Details on horizontal pumps in Bulletin C-355, & for vertical pumps request Bulletin V-837.
348I Taber Pump Co.

Pumps.....Practical Guide to Pump Selection—illustrations & descriptions with capacities & adaptability of facts to help avoid costly misapplication. For more complete details, request Bulletin No. S-146.
348J Taber Pump Co.

Pumps.....Information on the number of rings, depth of box, type of packing . . . chemical & physical properties of fluid being pumped, speed of shaft & other usable facts, in Pump Bulletin No. S-147.
348K Taber Pump Co.

Pumps.....Describes Wheeler-Economy Two-Stage Type DMD pumps. Construction features are illustrated, including dimension tables for various pump sizes. Also suggested applications. Bulletin C-1054.
348L C. H. Wheeler Mfg. Co.

Pumps.....Standard & special pumps for many varied liquid transfer installations are described and illustrated in a new 4 p. brochure. Includes study of correct pump selection for each job. See Form 1323.
348M Pump Engrg. Co.

Pumps.....Handle most anything that can pass thru a pipe, from free-flowing liquids to non-pourable pastes—even materials containing relatively large particles or abrasives. Moyno Pump Bulletin No. 30-CE.
348N Robbins & Myers.

Pumps.....Pump liquids—gases—slurries . . . without corrosion or contamination. Wavelike motion of steel fingers forces material through tubing. Makes available a descriptive Catalog containing full details.
348O Sigmamotor, Inc.

Pumps.....Nagle pumps handle slurry against 400' head. Design of the type "T" pump provides quick slip-page seal adjustment, etc. Built for gritty, abusive jobs. Complete information in Catalog No. 5206.
348P Nagle Pumps.

Pumps.....Describes Wheeler-Economy Type M pumps for medium and high head services. Includes the advantages of high efficiency and low maintenance in addition to details of construction. Catalog No. A-155.
348Q C. H. Wheeler Mfg. Co.

Pumps.....Performance of this pump is assured for ability to handle heat transfer liquids efficiently. Quality features: smothering gland; water-cooled bearings; large oil reservoir. Request complete information.
348R Buffalo Pumps.

Pumps.....For transfer, metering, spray drying, a Gaulin Triplex pump is a rugged, heavy-duty machine built to minimize operating, etc. Its horizontal design makes every part accessible. Bulletin P-55.
348S Manton-Gaulin Mfg. Co.

Pumps.....Worthite is "super-stainless", corrosion-resisting alloy steel containing more than 50% of the alloying elements: nickel, chromium, etc. The balance is mainly iron. Request Bulletin W-350-B4.
348T Worthington Corp.

Pumps, Acid.....Announces a new portable electric acid pump (Centri-F Pump) which conveniently and safely transfers acids from open vessels as well as from standard carboys and drums. Request information.
348U General Scientific Equipment.

Pumps, Acid.....On most difficult pumping jobs . . . dependable highly efficient pumps deliver continuous, trouble-free performance on round-the-clock schedules wherever they are installed. Full details.
348V A. R. Wilfley & Sons.

Pumps, Acid.....Mighty midget for pumping acids. Jabsco neoprene-impeller pump made of Ace hard rubber outlasts, out-pumps anything in its pressure, size and price class. Full Details in Bulletin No. 97A.
348W American Hard Rubber Co.

Pumps, Acid.....80-gpm. centrifugal pump with hard rubber casing and impeller, Hastelloy C shaft. Handles nearly all corrosives. Mechanically simple, trouble-free. For information, request Bulletin CE-55.
348X American Hard Rubber Co.

Pumps, Acid.....Announces handy, economical acid pump, weighing only 5 lbs. Designed for removing acid or other liquids from carboys or other bulk containers, including 55 gal. drums. Request literature.
348Y Engineered Equipment Co.

Pumps, Acid & Chemical.....Pumps to handle every acid or chemical fluid used in industry. Offers help with particularly difficult chemical pumping problems. For pertinent details, request Bulletin 202-7.
339a *Lawrence Pumps.

Pumps, Acid, Submersible.....Illustrated reference describes line of submersible acid pumps with vertical shaft . . . for pumping acids or slimy liquids from containers, tanks, pits, etc. Includes design features.
348Z Neumann & Weaver.

Pumps, Boiler Feed.....Buffalo 2-stage Type RR Pump for clear water at high pressures, any temperatures. Used successfully on boiler feed for many years. For complete information, request Bulletin No. 980.
348AA Buffalo Pumps.

Pumps, Centrifugal.....Furnishes reference describing the new end suction centrifugal pump. Includes materials of construction, features of design, performance tables, dimensions, etc. Illustrated Bulletin No. 4011.
348BB Deming Co.

Pumps, Centrifugal.....For water only, this compact unit-type with motor rotor and pump impeller on the same shaft can be mounted and operated in any plane. For full details, request Bulletin No. 240.
348CC Pa. Pump & Compressor Co.

Pumps, Centrifugal.....Describes new line of light-weight centrifugal pumps. Capacities range from 5,500 gph for the junior flyweight to 18,000 gph for a senior model. Features and illustrations in Bulletin No. 55LW.
348DD Rice Pump & Mach. Co.

Pumps, Centrifugal.....Illustrated bulletin describes "Flexflo", the stainless, foamless, sanitary centrifugal pump. Contains data giving capacity range & diagrams showing compact design. Bulletin G-524.
305a *Cherry-Burrell Corp.

Pumps, Centrifugal.....20 p. includes: data & outline drawing of Worthite pumps with standard stuffing box; photos of typical open type impellers; parts list; etc. Request Bulletin No. W-350-B14B.
348EE Worthington Corp.

Pumps, Centrifugal.....Built to handle high static heads—feature single-stage, double-suction centrifugal design. Includes the numerous features, specifications, performance tables, etc. in Bulletin No. 350-5.
348FF American-Marsh Pumps.

Pumps, Centrifugal..... Describes new line of centrifugal pumps designed especially for handling corrosive liquids and slurries. Complete information, including performance data, found in Bulletin No. 725.4.
348GG Goulds Pumps.

Pumps, Centrifugal.....Complete Worthington SESC pump line consists of six separate types, all suitable for either motor, turbine, or belt drive. Ratings from 2700 GPM and 230 ft. head. Request literature.
344-5 *Worthington Corp.

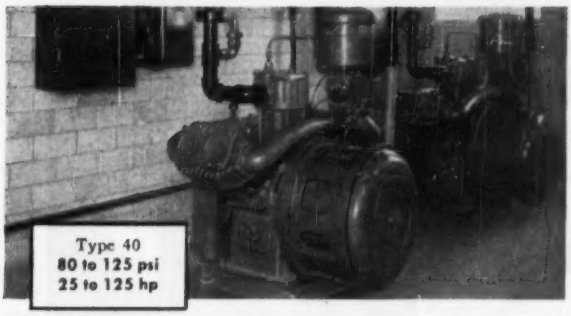
Pumps, Centrifugal.....Specially designed rubber lined pumps for corrosion abrasion resistance. Only a cutaway model can show the many features that spell long life & low maintenance. Request Bulletin 300.
167b Industrial Filter & Pump.

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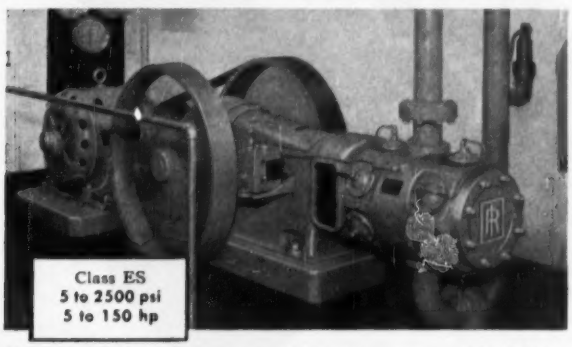
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You can always depend on I-R compressors for real economy



Type 40
80 to 125 psi
25 to 125 hp

High-capacity, two-stage compressors with air-cooled cylinders and intercoolers, available with three types of electric motor drive: V-belt, flexible coupling and unit type with compressor and motor on common shaft. All units are highly efficient, compact and light in weight.



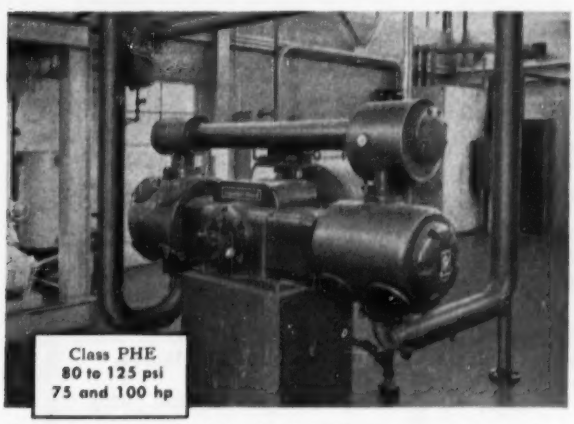
Class ES
5 to 2500 psi
5 to 150 hp

Heavy-duty units with one, two and three stages—arranged for electric motor or steam drive. These double-acting, horizontal, crosshead-type compressors, with Channel Valves and water-cooled cylinders, are built for continuous full-load service under severe operating conditions.

- *Efficient operation*
- *Low maintenance costs*
- *Easy installation*

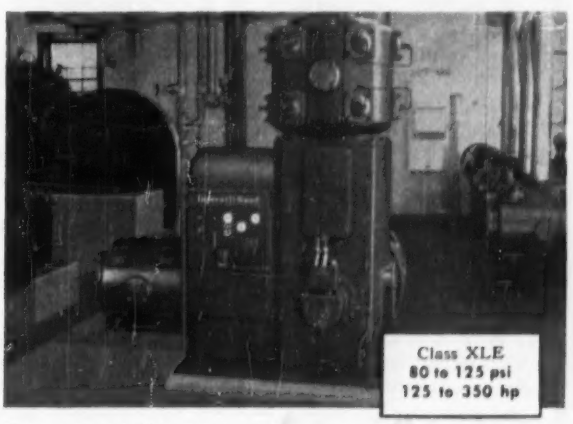
Whatever your compressed air requirements, there's an Ingersoll-Rand compressor that's *right* for the job. Because mechanical and compression efficiencies are high, the unit will deliver full rated output with consistently low power requirements. With its rugged, dependable construction, the I-R compressor will stay on the job longer, with less time out for maintenance.

You can be sure of receiving real economy from *any* Ingersoll-Rand compressor . . . a machine that is economical to install, run and maintain. Contact your nearest I-R branch for complete information.



Class PHE
80 to 125 psi
75 and 100 hp

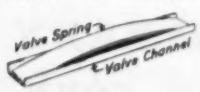
Opposed-cylinder, balanced-design, two-stage compressors with water-cooled cylinders and built-in motor. There are no adjustments within the sealed frame. Full-floating aluminum bearings have extremely long life. Channel Valves are highly efficient. A completely packaged unit.



Class XLE
80 to 125 psi
125 to 350 hp

Heavy-duty, double-acting, two-stage, water-cooled compressors, featuring a completely new "L" design which makes the XLE simple, compact, accessible and economical. Pipeless, Thru-Frame Air Flow. Packaged intercooler and built-in electric motor save space—reduce installation, power and maintenance costs.

Only I-R compressors have CHANNEL VALVES



Known for high efficiency, quiet operation and exceptional durability. Entirely different. Each valve assembly is a combination of rigid stainless-steel channels and springs, with trapped-air spaces which cushion action.

OTHER TYPES AND SIZES . . . TO 6000 HP

Ingersoll-Rand

1-389 11 BROADWAY, NEW YORK 4, N. Y.

This is Why the Nash is the Most Simple Compressor



It's the Nash!

There are no mechanical complications in a Nash Compressor. A single moving element, a round rotor, with shrouded blades, forming a series of buckets, revolves freely in an elliptical casing containing any low viscosity liquid. This liquid, carried with the rotor, follows the elliptical contour of the casing.

The moving liquid therefore recedes from the rotor buckets at the wide part of the ellipse, permitting the buckets to fill with gas from the stationary Inlet Ports. As the casing narrows, the liquid is forced back into the rotor buckets, compressing the gas, and delivering it through the fixed Outlet Ports.

Nash Compressors produce 75 lbs pressure in a single stage, with capacities to 6 million cu. ft. per day in a single structure. Since compression is secured by an entirely different principle, gas pumping problems difficult with ordinary pumps are often handled easily in a Nash.

Nash simplicity means low maintenance cost, with original pump performance constant over long periods Data on these pumps sent immediately on request

No internal wearing parts.

No valves, pistons, or vanes.

No internal lubrication.

Low maintenance cost.

Saves floor space.

Desired delivery temperature automatically maintained.

Slugs of liquid entering pump will do no harm.

75 pounds in a single stage.

NASH ENGINEERING COMPANY
313 WILSON, SO. NORWALK, CONN.

1956 INVENTORY

TECHNICAL LITERATURE

Pumps, Centrifugal—

Pumps, Centrifugal

Pumps, Centrifugal ..... Covers the Electri-Cand pump—the answer to a pressing need for handling liquids without leakage. Includes details of outstanding features, a complete parts list, etc. Reference No. SN-54.
351A Allis-Chalmers Mfg. Co.

Pumps, Centrifugal.....Describes Warren-Quimby Centrifugal Pump, Type "G", for process and medium-duty chemical service. Capacities up to 400 gpm—heads up to 240 feet. Request illustrated Bulletin WQ-213.
351B Warren Steam Pump Co.

Pumps, Centrifugal.....Original manufacturer of self-priming centrifugal pump offers data on new Type CG LaBour—operates under positive or negative suction lift conditions as required. Request Bulletin G-1.
351C LaBour Co.

Pumps, Centrifugal.....From impeller to shaft seal . . . Weinman pumps are built better. The built-in quality adds up to cost-saving, pumping efficiency for every job. Request descriptive product Bulletins.
351D Weinman Pump Mfg. Co.

Pumps, Centrifugal.....Easily adapt to changing conditions & demand, save power, combat corrosion & erosion. Speeds, 1750 & 3500 rpm; capacities to 600 gpm; heads to 300 ft. Request latest product literature.
351E Ampco Metal.

Pumps, Centrifugal.....Meet strict process requirements . . . with Eastern centrifugal pumps. New catalog contains engineering data, performance charts, diagrams & helpful general information. Bulletin 110 F.
351F Eastern Industries.

Pumps, Centrifugal.....The Eastern D-11 is the smallest, close-coupled, single-stage centrifugal pump available with an induction type motor. Complete specifications on all Eastern centrifugal pumps in Bulletin 120-B.
351G Eastern Industries.

Pumps, Centrifugal ..... Specially built centrifugal pumps are used to handle abrasive & corrosive sludges, slimes & slurries. They give maximum pumping service for years. Descriptive Bulletins available on request.
351H McNally Pittsburgh Mfg. Corp.

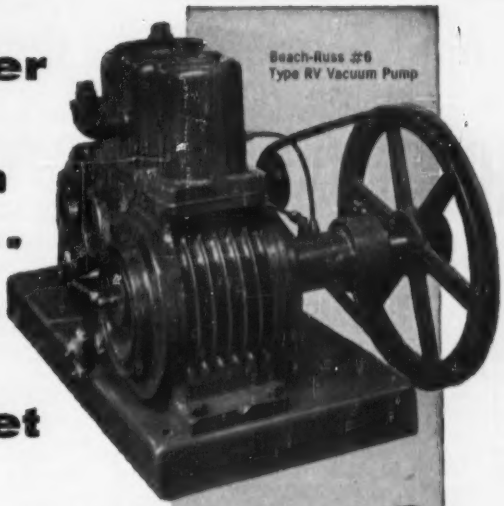
Pumps, Centrifugal.....New paper stock & industrial liquids pump features a diverging type impeller which enables it to handle liquids containing high-concentrations of solids, air & gasses. Bulletin No. 7325.
351I Ingersoll-Rand Co.

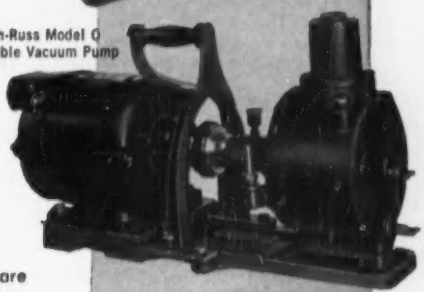
Pumps, Centrifugal.....Re-designed line of DMV-DHV single-stage centrifugal pumps is now available. Feature double mechanical shaft seals & pre-lubricated, sealed ball bearings. Request Form 7248-A.
351J Ingersoll-Rand Co.

Ever use chemicals?

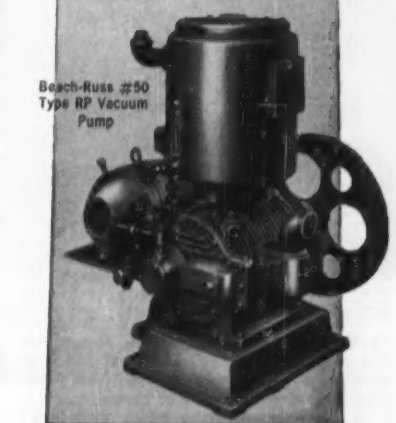
Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 71).

Whatever Your Vacuum Needs... BEACH-RUSS Can Meet Them





Beach-Russ High Vacuum Pumps are available in a complete range of types and sizes to meet any vacuum need. From the smallest 1 c.f.m. portable unit for testing and dehydrating work, to the large 1800 c.f.m. units for process operations, these precision-built



BEACH-RUSS Vacuum Pumps give

Fast "Pump-Down"
High Efficiencies
Quiet, Vibrationless Operation
Long Service Life

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New Information on HIGH VACUUM

Components, Equipment, Systems

Brochures listed below give engineering data and application information on N R C high vacuum products. These products offer unparalleled reliability, productivity, and ease of operation. They incorporate features which result from experience gained from nearly two decades of designing, building, and operating high vacuum equipment.

P3—**Mechanical Pumps**—NRC Rotary Gas Ballast pumps maintain peak efficiency even when pumping 100% water and other condensable vapors . . . have paid for themselves in 3 years by oil savings alone.

MB1—**Mechanical Booster High Vacuum Pumps**—The NRC Series 4700 pumps provide peak speeds over the broad pressure range 5–2200 microns. Seven models. Capacities 1000–12,000 CFM.

DP2—**Oil and Mercury Booster and Diffusion Pumps**—Unusually easy to maintain . . . long-lived . . . these pumps give top performance despite normal variations in operating conditions.

G4—**High Vacuum Gauges**—Outstanding among NRC's line of Thermocouple, Ionization, and Pirani Gauges is Model 520 Alphatron® Ionization Vacuum Gauge with a 10^{-4} to 1000 mm Hg. range.

V1—**High Vacuum Valves**—NRC offers hand or air-operated air-release, clapper, slide, throttling, and bellows or O-Ring sealed, globe, angle and wye high vacuum valves. Sizes ⅛" to 24".

S1—**Vacuum Seals and Feed Throughs**—There is a complete line of NRC vacuum-tight devices for introducing electricity or motion into a vacuum system.

F2—**Vacuum Furnaces**—Efficient, dependable and easy operation are features of NRC High Vacuum Arc, Induction and Resistance Furnaces. Standard Models of capacities from 2 to 2000 lbs. are now being used in all types of melting and heat treating.

A2—**Vacuum Analytical Equipment**—The NRC Model 912 Vacuum Fusion Gas Analysis Apparatus and the NRC Model 917 Hydrogen in Titanium Determinator are industry's standards for determining gas content of metals.

FD3—**Freeze Drying Equipment**—Designed for reliability and operator convenience, the complete Freeze Dry line includes laboratory, pilot plant and production-sized models.

NRC EQUIPMENT CORP.

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Dept. 5A, Charlemont St. — Newton Highlands, Mass.

Pumps, Blowers & Compressors

TECHNICAL LITERATURE

Pumps, Centrifugal—
Pumps, Condensate Return

Pumps, Centrifugal.....The Series 10 standard centrifugal pumps are built from the same parts . . . one shaft fits all pumps. For more complete information, request a copy of circular No. 184B.
352A Dean Bros. Pumps.

Pumps, Centrifugal.....New pump is designed specifically to serve the chemical field. The stuffing box sealing in the type "GS" pump accommodates either packing or a mechanical seal. Circular 190.
352B Dean Bros. Pumps.

Pumps, Centrifugal.....Designed for efficient liquid transmission & low cost maintenance, pumps offer many exclusive features. Furnishes engineering data on all types of pump applications in Catalog No. 253.
352C Tri-Clover Div.

Pumps, Centrifugal..... Impervious graphite pumps feature mechanical seal with inclosed coolant, rugged type SN armored connections, interchangeable parts, wide capacity range, etc. Catalog Section S-7250.
352D National Carbon Co.

Pumps, Centrifugal.....Illustrated reference describes line of SSV centrifugal pumps. Includes details of construction of the various sizes available, operating advantages for users, etc. Bulletin No. 107.
352E Frederick Iron & Steel.

Pumps, Centrifugal.....New data sheet describes Hydroseal pumps for hydraulic ash handling systems. Uses photographs, schematics & line drawings to illustrate design, construction & operation. Data Sheet Pa.
352F Allen-Sherman-Hoff Co.

Pumps, Centrifugal Chemical.....Worthington offers you the widest standard corrosion-resistant pump line as Karbate impervious graphite supplements Worthite. Request Bulletins W-350-B14A and W-350-B13.
352G Worthington Corp.

Pumps, Centrifugal, Chemical.....Describes new Worthite Self-Priming Centrifugal Chemical Pumps. Data on maximum interchangeability & coverage, minimum spare parts requirements, etc. Bul. W-350-B13.
352H Worthington Corp.

Pumps, Centrifugal & Displacement..... Illustrated 4 p. folder describes a complete line of small rotary displacement & centrifugal pumps designed to meet specific demands of the chemical & allied process industries.
352I Eco Engrg. Co.

Pumps, Centrifugal, Sealless..... New design features of leakproof "canned" pumps extend applications & slash price 20-25%. Offers mass production techniques & little maintenance. Request Bulletin No. 1030.
352J Chempump Corp.

Pumps, Centrifugal, Sealless..... Describes Series DE (Double Ended) Chempumps—newest addition to line of seal-less "canned" motor centrifugal pumps. Performance, diversion & operation principles. Bulletin 1020.
352K Chempump Corp.

Pumps, Centrifugal Stock..... Selected sizes of B&G Series 1522 & 1531 centrifugal pumps are stocked at factory for immediate shipment. Capacities to 225 gpm, heads to 140 ft. Price & Selection Catalog.
352L Bell & Gossett Co.

Pumps, Centrifugal Sump.....Principal use for vertical centrifugal sump pumps is for pumping waste water or sewage where outlets are located below sewer level. Data in fully illustrated Bulletin No. WQ-220.
352M Warren Steam Pump Co.

Pumps, Chemical.....Offer new features that make them rugged, dependable, long-lived pumps for handling corrosive liquids. In 9 sizes providing capacities up to 720 gpm & heads up to 200 ft. Bulletin 725.4.
352N Goulds Pumps.

Pumps, Chemical.....Announces a new, all-purpose chemical pump . . . the OKM-Model 100-C. Includes: description; operation; lubrication; primary uses; special equipment; specifications; etc. Illustrated Brochure.
352O O. K. Mach. & Tool.

Pumps, Chemical.....Features Lawrence 10-inch heavy duty stainless steel chemical pump and steam-jacketed chemical pump with water-cooled bearings. For further pump information, request Bulletin 203-7.
339b *Lawrence Pumps.

Pumps, Chemical.....Furnishes a complete line of Buffalo pumps, ready to handle corrosive or abrasive liquids at least maintenance cost. For full product information, request illustrated Bulletin 982.
352P Buffalo Pumps.

Pumps, Chemical.....4 p. bulletin details features & specifications of company's line of canned motor pumps for general process pumping. For further details on Series C Chempumps, see Bulletin 1050.
352Q Chempump Corp.

Pumps, Chemical Oil-Lubricated..... Recommended for pumping liquors, corrosive materials and solutions in the most used ratings to 3500 gpm, heads to 400 feet for liquids to 550 F. Request Bulletin 52B7638.
352R Allis-Chalmers Mfg. Co.

Pumps, Close-Coupled.....Feature the "Q" Factor . . . the built-in quality which provides trouble-free satisfaction and long life. Offers complete description of Class CCL close-coupled pumps in Bulletin 975.
352S Buffalo Pumps.

Pumps & Compressors.....Rotary vacuum pumps & compressors combine rugged construction & simplicity of design at a reasonable cost. Complete details of design & construction in 8 p. illustrated Bulletin 510.
352T Lammert & Mann Co.

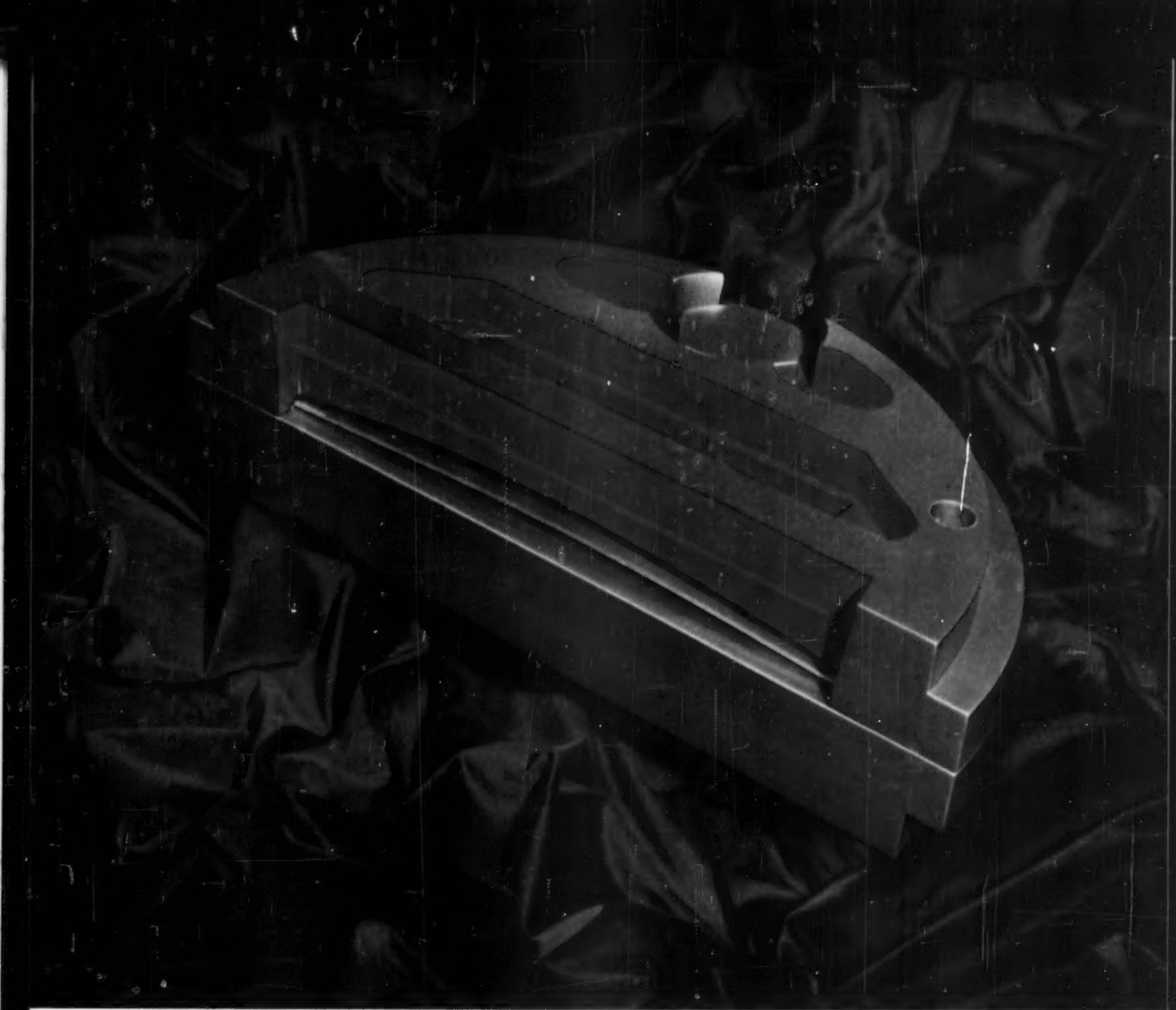
Pumps, Condensate.....New Sarco type S Condensate Pumps are close-coupled, bronze-fitted pumps. Easy to convert from single to duplex, no sub-base required, easy to take apart for inspection. Bulletin No. 1460.
352U Sarco Co.

Pumps, Condensate Return.....Features bronze construction, non-clogging open impellor, stainless steel shaft. Pump affords quiet, dependable operation & has long life with little maintenance. Request details.
352V Walter H. Eagan Co.

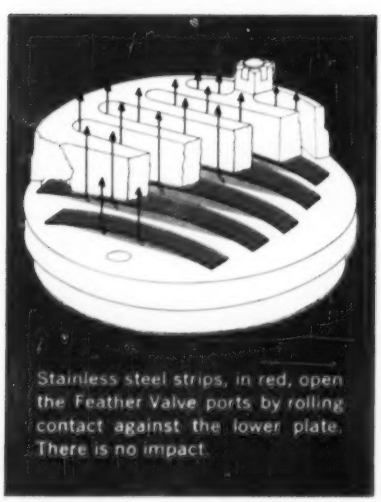
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This compressor valve works with no impact for longer life, best efficiency



Stainless steel strips, in red, open the Feather Valve ports by rolling contact against the lower plate. There is no impact.

The Feather* Valve is the lightest, simplest, quietest compressor valve ever developed. Flexible strips of stainless steel open and close the valve ports with a gentle rolling contact. There is no destructive impact . . . even when the valve is operating as fast as forty times a second.

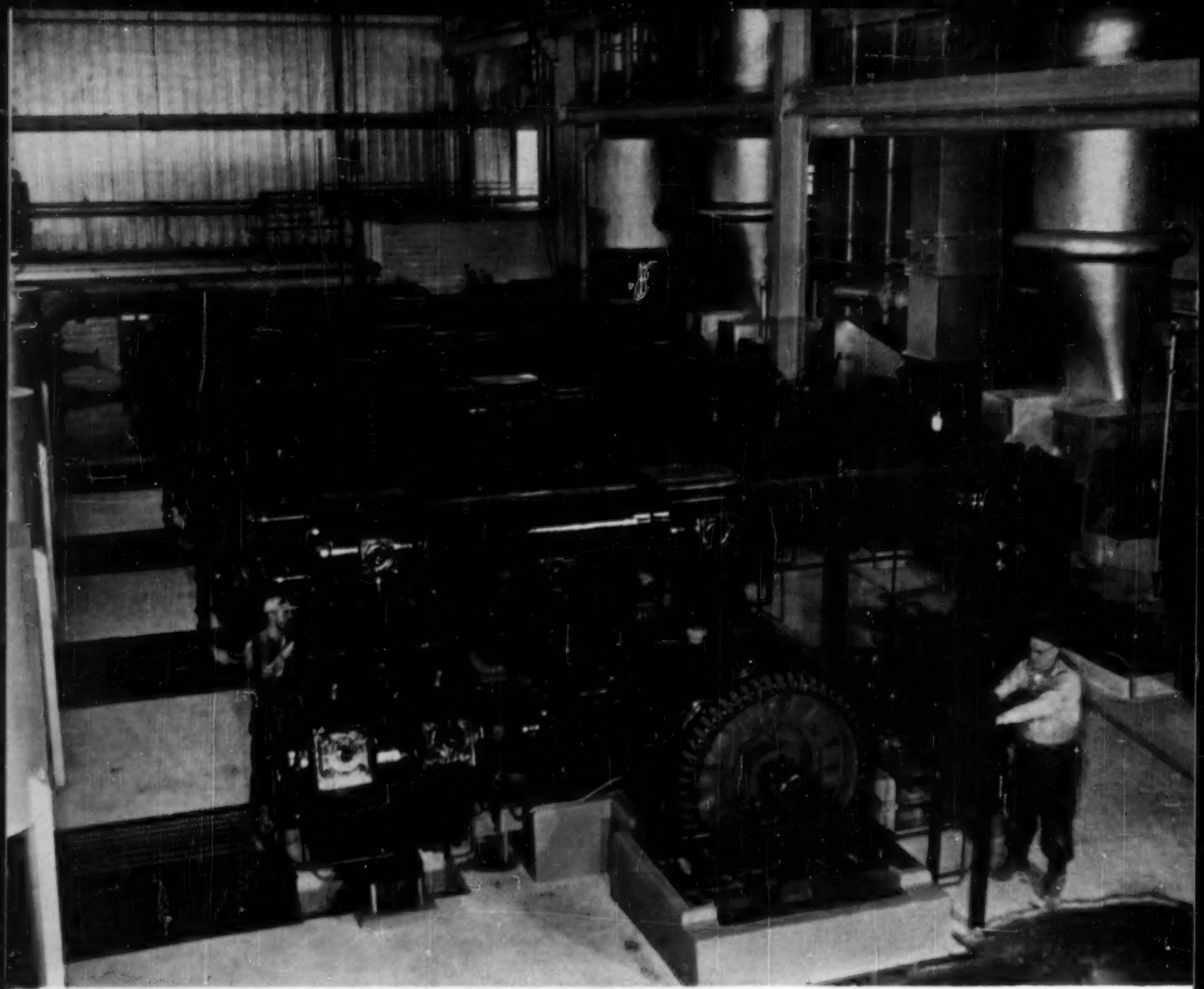
This lack of impact assures long life and negligible maintenance. The valve itself is all but indestructible. Absence of buffer plates and cushioning devices give it extreme simplicity.

The Feather Valve is quiet and reliable because of its lightness and tight contact seating. Valve action is very sharp. There is virtually no slip or back flow. As a result, you get minimum valve loss and use minimum power.

To get the utmost in performance, be sure you specify Worthington when you buy your next compressor. Worthington Corporation, Harrison, N. J. K-6-2

WORTHINGTON

*Reg. U. S. Pat. Off.



You get permanent alignment with these balanced opposed compressors



To assure permanent alignment, mated steel tie bars—machined for precise fit—are locked over each main bearing.

Here's the big difference in opposed compressor design—a Worthington exclusive that gives you permanent frame alignment . . . for longer wearing parts life, less maintenance.

Locked in place over each main bearing is a heavy steel tie bar. This makes the frame strongest at the point of greatest loading, assuring years of heavy duty, continuous operation. When necessary, the tie bars are easy to remove for inspection or maintenance.

Other advantages. The Worthington balanced opposed design is more compact, cutting the amount of foundation and floor space needed and saving installation time and expense. It's highly suited to large horsepower multi-service or multi-stage applications. Up to four cylinder pairs can be arranged on one frame.

For more information, see your nearest Worthington District Office or write to Section K63, Worthington Corporation, Harrison, N. J. K-6.3

WORTHINGTON

TECHNICAL LITERATURE

Pumps, Condensate & Vacuum—
Pumps, Electromagnetic

Pumps, Condensate & Vacuum.....Describes new Sarco Type S Condensate Pump & complete line of vacuum & condensate pumps. Features cutaway illustrations, pump selection guide & installation diagrams. Bul. 1465.
355A Sarco Co.

Pumps, Controlled Volume.....New reference—prepared with assistance of leading water treating consulting firms—describes how pumps are used in typical industrial water treating systems. 24 p. Bulletin No. 953.
355B Milton Roy Co.

Pumps, Controlled Volume ..... Illustrated booklet describes motor driven controlled volume pumps with instrument air stroke length adjustment. Covers application, features, operation, etc. Request Bulletin No. 955.
355C Milton Roy Co.

Pumps, Controlled Volume.....Describes pump Model H-20 . . . designed for accurate chemical feed at low cost. Includes data on simplex & duplex models, capacities, pressures etc. Illustrated Bulletin H20-1.
355D Milton Roy Co.

Pumps, Diaphragm.....Cuts operating and maintenance costs in handling corrosive, abrasive, viscous, heavy or delicate fluids. Capacities to 100 gpm. Company makes full details available in Bulletin 137A.
315e *T. Shriver & Co.

Pumps, Diaphragm.....Describes simple operation of adjustable stroke diaphragm pump. Includes photos, data & a series of drawings explaining construction, mechanism & capacity of pumps. Bulletin No. P8-B9.
355E Denver Equipment Co.

Pumps, Diaphragm Slurry.....Self-contained unit features dual-ball check valve design & variable-speed drive, permitting gentle pumping action, positive feed & metering characteristics, etc. Bulletin No. K8P-1.
355F Komline-Sanderson Engrg.

Pumps, Direct Flow.....Data Sheet illustrates & describes the Aldrich 6" Stroke Direct Flow Pump Series. Includes Triplex, Quintuplex, Septuplex & Nonduplex Pumps from 300 to 900 hp. Data Sheet 67A.
355G Aldrich Pump Co.

Pumps, Double Suction ..... Rugged double suction pumps assure long life and low maintenance. Feature heavy-duty construction, wide material choice, unit responsibility, etc. Offers details in Bulletin No. 08B6146.
355H Allis-Chalmers Mfg. Co.

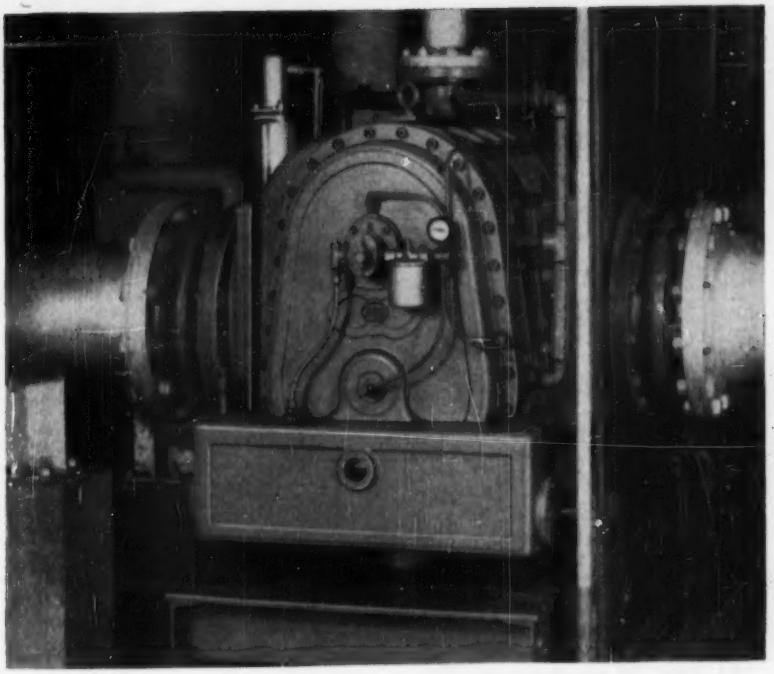
Pumps, Double Suction.....Hydraulically balanced, highly efficient and durable. In sizes to deliver from 10 to 14,000 gpm for circulating, air conditioning, other plant services. Details in Bulletin 955P.
355I Buffalo Pumps.

Pumps, Drum.....There is no appreciable pressure built up in the Graco Fast-Flo Drum Pump; the operator can always dispense the exact amount required; starts and stops easily. Request new Fast-Flo idea book.
355J Gray Co.

Pumps, Electromagnetic.....Offers new literature item listing application, features, description & operation of A-C Electromagnetic Pumps for liquid metals & low-resistance conducting fluids. Ref. No. GEA-6395.
355K General Elec. Co.

Pumps, Electromagnetic.....For high-temperature liquid metal. New literature item discusses different types and models offered. Request your copy of this informative bulletin immediately—Ref. No. GER-1032.
355L General Elec. Co.

* From advertisement, this issue.



4 years of gruelling operation frequently at overload pressures and still no maintenance needed

Since 1951, Standardaire Blowers installed at Spencer Chemical Company have been operating 24 hours a day supplying process air for production of synthetic ammonia.

Although normally operated at 1750 rpm and 8 psig, these units periodically are required to run at more than 50 percent above rated capacity for as long as a month at a time. When brick and catalyst dust seal over reformer catalyst beds, this pressure is needed to force the gases through and avoid costly shutdowns.

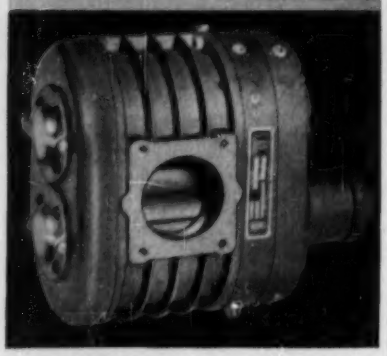
After four years of this gruelling, continuous operation, a recent test disclosed virtually no reduction in efficiency of the Standardaire Blowers. They have required no maintenance.

Exclusive cycloidal design and simple, compact construction enable Standardaire Blowers to move more gas or air per pound of blower, with less wear, less maintenance and power consumption. Write for complete information.

READ STANDARD
CORPORATION

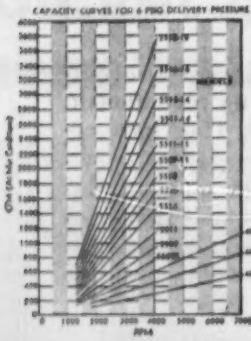
BLOWER-STOKER DIVISION
370 LEXINGTON AVENUE, NEW YORK 17, NEW YORK

How Miehle-Dexter Blowers supply air for your product



PROBLEM: Design any product requiring a blower—up to 14 psig. of air (or gas). Do not increase size, weight or cost of product.

SOLUTION: Only Miehle-Dexter Blowers solve this problem. Exclusive 3-lobe construction provides maximum air in minimum size blower. Units require little or no maintenance. Hundreds of applications. Now used as powerful new jet engine starters in mobile ground power equipment. Used for pneumatic conveying, agitation, aeration cooling, ventilating, supercharging. For more facts, write for new Bulletin 255.



Typical capacity curve for 6 psig. delivery pressure. Standard sizes available up to 4000 cfm. Vacuum to 15" hg. Pressures up to 14 psig. (30 psig. by multi-staging.)

MIEHLE DEXTER
Supercharger Division
Dexter Folder Company
116 Fourth St., Racine, Wisconsin

Pumps, Blowers & Compressors

TECHNICAL LITERATURE

Pumps, Electronic—
Pumps, Sealless

Pumps, Electronic.....The new "Flexducer" transfers electrical energy to mechanical energy. Has no moving parts. Company offers an illustrated bulletin which gives complete details. Bulletin 802.
356A Guiltane Industries.

Pumps, Fire.....Fully describes & illustrates new underwriters' approved fire pumps. Includes complete fire pump selection charts & a set of "typical" fire pump specifications. Request new 36 p. Bulletin No. B-150C.
356B Peerless Pump Div.

Pumps, Gas.....Positive control of volume and pressure, with the simple rotary impeller principle. Details in two bulletins, Bulletin 31-B-17 for small sizes & Bulletin 32-33-B-13 for larger units.
356C *Roots-Connersville Blower.

Pumps, Gear.....SK Gear Pumps pump many types of materials . . . alcohol, molasses, coolants, fuel oils, soup, road tars, kerosene, varnish, lube oils of all grades, wax, etc. Details of line in Bulletin No. 17A.
356D Schutte & Koerting Co.

Pumps, General Purpose.....Bulletin discusses properties and specifications of general purpose pumps. Gives instructions on disassembling and reassembling these pumps. For details, see Catalog Section BCI.
357a *Viking Pump Co.

Pumps, General Purpose.....Designed for a broad range of clean liquid applications, these Roper Series 3600 Pumps are recognized for highly dependable performance, low maintenance characteristics. Request Cat.
356E Geo. D. Roper Corp.

Pumps, Hand.....New piston-type, positive-displacement, self-priming hand pump now in production delivers 20 gpm at lower "cost-per-gallon" than rotary vane-type hand pumps rated at 10 gpm. Bulletin 3011.
356F Bowser, Inc.

Pumps, Heavy Duty.....Maintenance bulletin deals exclusively with bracket-mounted, Heavy-Duty Viking Pump. Gives instructions on disassembling and reassembling this pump. For details, see Catalog Section CCI.
357b *Viking Pump Co.

Pumps, Heavy Duty.....Bulletin deals exclusively with the 300 series Heavy Duty Type Viking Pump. Tells how to disassemble and reassemble these pumps. For complete details, see Catalog Section DCI.
357e *Viking Pump Co.

Pumps, High Pressure.....Completely illustrated reference describes line of Gaulin High Pressure Horizontal Triplex Pumps. Includes data on construction, operation, features, specifications, etc. Bulletin P-55.
356G Manton-Gaulin Mfg. Co.

Pumps, High Vacuum.....The NRC Series 4700 Mechanical Booster pumps provide peak speeds over the broad pressure range; 5-2200 microns. Seven models. Capacities: 1000-12,000 CFM. Brochure MB1.
352b *National Research Corp.

Pumps, High Vacuum.....Are carefully designed — expertly machined — perfectly balanced . . . so that vibration has been reduced to an absolute minimum. Result — smooth, quiet operation. Details in Bulletin 13.
356H Central Scientific Co.

Pumps, High Vacuum.....Describes Kinney high vacuum pumps . . . for every industrial and scientific application. Product line is the largest of any in the world. For complete information, request Bulletin 403.
23 Kinney Mfg. Div.

Pumps, Hydraulic.....Hydropulse, the only Hydraulic Pump with all these features: high pressure; leak-proof; variable volume; pulsation-free delivery; sanitary. Request literature containing complete details.
356I Scott & Williams, Inc.

Pumps, Hydraulic.....Compact, lightweight hydraulic pump for many applications: Hydrostatic testing; as hydraulic pumping unit; to operate hydraulic jacks or machinery. For complete details, see Bulletin A-5.
292h *Watson-Stillman Fittings.

Pumps, Hydraulic Pressure Exchange . . . Describes Manton-Gaulin line of hydraulic pressure exchange pumps. Designed to handle corrosive and erosive slurries & solutions at high temperatures. Bul. HPX-55.
356J Manton-Gaulin Mfg. Co.

Pumps, Industrial.....Jabsco Industrial Pumps: instantly self-priming; simple, compact, only one moving part; durable neoprene impeller; self-lubricated; trouble-free operation. Request catalog sheets.
356K Jabsco Pump Co.

Pumps, Liquid.....Pump viscous fluids efficiently and economically . . . and serve as combined meter and pump due to their unusually high volumetric efficiency. Describes the entire line in Bulletin No. L51.
356L Kinney Mfg. Div.

Pumps, Liquid-Metal.....Designed to circulate liquid sodium and sodium potassium alloy, this pump is useful in applications requiring high temperature heat transfer mediums. Request further information.
356M Westinghouse Elec. Corp.

Pumps, Mechanical.....NRC Rotary Gas Ballast pumps maintain peak efficiency even when pumping 100% water & other condensable vapors. For engineering data & application information request Brochure P3.
352a *National Research Corp.

Pumps, Non-Clog.....8 p. illustrated booklet covers vertical, horizontal and close-coupled types. Used to handle liquid components of industrial processes, industrial waste. Request Bulletin 121-A.
356N Aurora Pump Div.

Pumps, Paint.....Large capacity paint pump for production finishing, maintenance painting, coating operations. Bulletin discusses specifications & capacities, models & accessories. Request Form No. 1-3100.
356O DeVilbiss Co.

Pumps, Paper Stock.....For handling high consistency liquids—save money and trouble with non-clogging paper stock pumps. Available in alloys or rubber-lined for corrosive and abrasive liquids. Bulletin No. 953.
356P Buffalo Pumps.

* From advertisement, this issue.

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Pumps, Piston-Diaphragm.....For controlled-volume pumping of fluids. Flow-charts, typical applications, description & specifications and models of various capacities & constructions in Bulletin No. 440.
357A Lapp Insulator Co.

Pumps, Plastic.....Announces new reference on Vanton "Flex-I-Liner" Plastic Pumps. Includes complete operating & performance data along with materials of construction & application tables. Catalog No. 55.
357B Vanton Pump & Equipment.

Pumps, Positive Displacement.....A report on recent findings with respect to the physical and chemical characteristics of non-metallic impellers for displacement pumps is set forth in a new illustrated Folder.
357C Eco Engrg. Co.

Pumps, Positive Displacement.....Designed with the spring-loaded, John Crane rotary seal, they are recommended for non-abrasive products having corrosive properties. Request complete product details.
357D Waukesha Foundry Co.

Pumps, Process.....Fully illustrated, 20 p. describes line of vertically split, single-stage & two-stage type process pumps. Includes design features, dimension tables, cross sectional views, etc. Bulletin Form 7094-B.
357E Ingersoll-Rand Co.

Pumps, Process.....Company offers slide selector which graphically shows the interchangeability of component parts for DL-DM pumps. Also provides quick reference to pump specifications. Available upon request.
357F Peerless Pump Div.

Pumps, Process.....DeLaval CPO-process pumps handle numerous liquids: salt brine; sea water; caustic solution; soap solutions; etc. Capacities to 2000 gpm—heads to 200 ft. Details in Bulletin No. 1125-B.
357G De Laval Steam Turbine Co.

Pumps, Process.....Type Z4 APCO process pump is ideal for the handling of liquefied petroleum gases, refrigerants & other light non-viscous liquids. Latest design features. Bulletin 111-ZA available.
357H Aurora Pump Div.

Pumps, Propeller.....Lawrence propeller or axial flow pumps are widely used to circulate large volumes of liquid or slurry against low heads as in evaporators, crystallizers, etc. Details in Bulletin 203-6.
357I Lawrence Pumps.

Pumps, Propeller.....Features 24-inch horizontal circulating propeller pump of nickel alloy construction. Lawrence pumps handle every fluid that can be pumped . . . corrosive, abrasive, hot or cold. Bulletin 203-7.
339c *Lawrence Pumps.

Pumps, Proportioning.....Announces the Uni-Feeder . . . a single-revolution, clutch-operated Philadelphia proportioning pump which offers a broad field of application. For complete details, request Catalog S-1254.
357J Phila. Pump & Machy. Co.

Pumps, Proportioning.....Company announces their new chemical proportioning pump (Model 1105-KH) . . . the unitized pump that cost no more than assembled pumps. Complete information in Bulletin 1100-M1.
357K Proportioneers, Inc.

Pumps, Proportioning.....The Model 1140 Proportioneer pumps are available at five different operating speeds, for various fluid viscosities. Request complete information on all pumps and price list.
343 *B-I-F Industries.

Pumps, Proportioning.....Describes Model 1105 Adjust-O-Feeder . . . designed for pumping petroleum, chemical and boiler feed water additives in accurate predetermined quantities. Bulletin 1105-2.
357L Proportioneers, Inc.

Pumps, Proportioning . . . Microflex Chemical Proportioning Pump offers: simplex & duplex styles; various piston-cylinder assemblies can be used interchangeably; self-aligning pistons. Bulletins 4065-2 & 4064.
357M American Instrument Co.

Pumps, Regenerative Turbine.....Illustrated, 12 p. describes 19 models of two-stage regenerative turbine pumps. Includes principle of operation, data on mechanical seals available, etc. Bulletin No. 107.
357N Roy E. Roth Co.

Pumps, Rotary.....''Gear-within-a-gear'' action & port designs allow material (viscous or thin liquids) to enter pump. Non-slip action of gears forces liquid out in a steady volume. Bulletin Series No. 558c.
357O Viking Pump Co.

Pumps, Rotary.....The best answer to your pumping problems is a Roper rotary pump and . . . there is a type for you. Roper makes available descriptive literature on its line of pumps. Request Bulletins.
357P Geo. D. Roper Corp.

Pumps, Rotary.....A new line of stainless steel rotary pumps for corrosive solutions, abrasive slurries & fluids which must be kept free from contamination has been announced by Vanton. Details in Bulletin VP561.
357Q Cooper Alloy Corp.

Pumps, Rotary.....Makes available a new 28 p. reference furnishing complete information on 306 General Purpose Viking pump models. Capacities from ½ to 1050 gpm. Request Catalog Section Bc.
357R Viking Pump Co.

Pumps, Rotary.....New 40 p. Engineering Manual includes Viking rotary pump fundamentals, the 10 steps in selecting a Viking pump, & a special section to help you choose the right rotary for your job. Manual Kc.
357S Viking Pump Co.

Pumps, Rotary.....New, corrosion-resistant bronze rotary pump for vacuum and/or pressure applications in handling steam, hydrogen, natural or manufactured gas, nitrogen, etc. Request further information.
357T Dexter Folder Co.

Pumps, Rotary, Gear-Type.....Best for handling high-viscosity fluids as their large, unobstructed passages mean low entrance losses. Also, there are no valves or valve springs. See Bulletin W-483-B2.
357U Worthington Corp.

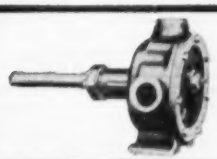
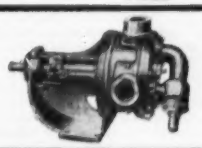
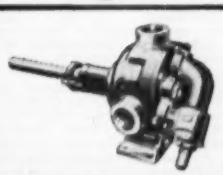
Pumps, Rotary Screw.....Catalog L8 gives useful applications & specification data on IMO pumps & article, "Rotary Pumps, Basic Considerations in Their Application," describes rotary pumps in general.
357V De Laval Steam Turbine Co.

Pumps, Rubber-Lined.....Company's line of Type D8 Rubber-Lined Pumps provide valuable features: longer pump life; maintenance savings; elimination of shutdowns. For details, request Bulletin 982.
357W Buffalo Forge Co.

Pumps, Sealless.....Combining motor & pumps in a single unit, Chempump is most significant advance in pump design in half a century. Hard-to-handle fluids can't leak or become contaminated. 16 p. Bulletin 1010.
357X Chempump Corp.

PICK THE RIGHT VIKING PUMP for your needs

it's easy with this Simple Chart

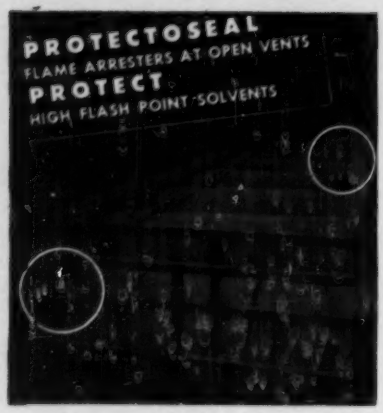
	Catalog	Service	Capacity	Maximum Pressure	Features
	Ask for Section DCI	General Purpose Pumps for Handling Liquids Ranging from Fuel Oil to Molasses	½ to 1050 G.P.M.	50 P.S.I. Non-Lubricating Liquids 100 P.S.I. Lubricating Liquids	Complete Range of Materials. Packed or Mechanical Seal. Jacketed Equipment.
	Ask for Section CCI	Heavy Duty Pumps Handle Both Thin and Very Viscous Liquids	10 to 300 G.P.M.	100 P.S.I. Non-Lubricating Liquids 200 P.S.I. Lubricating Liquids	Complete Range of Materials. Packed or Mechanical Seal Jacketed Equipment.
	Ask for Section DCI	Underwriters Pumps Handle All Types of Clean Hazardous Liquids	5 to 300 G.P.M.	50 P.S.I.	Standard Fitted Steel Fitted Bronze Fitted All Bronze Construction. Packed or Mechanical Seal.

Your Viking district office or distributor will promptly furnish complete information on these or many other Viking rotary pumps to fit your needs. Send for any of the above catalogs or check with your Viking distributor.

THE ORIGINAL "GEAR-WITHIN-A-GEAR" ROTARY PUMP

VIKING PUMP CO. Cedar Falls, Iowa

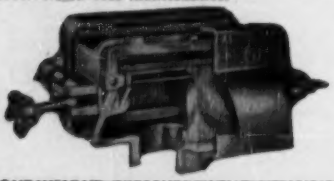
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STORAGE TANK INSTALLATION AT EASTERN BY-PRODUCT BENZOL PLANT COMBINES

Maximum Air-Flow Capacities
Positive Fire Protection
Low-Cost Maintenance

Protectoseal Series No. 860 Non-Conservation Type Vents installed on the large, horizontal storage tanks of this By-Product Benzol Plant provide maximum air-flow consistent with operating efficiency, positive fire protection and effective, low-cost maintenance.

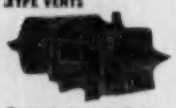


LIGHT WEIGHT, PRESSURE-TIGHT HOUSINGS
Combine ease of installation with durability. Housings meet hydrostatic pressure tests by Underwriters' Laboratories.

POSITIVE FIRE PROTECTION
Sturdy Protectoseal rectangular plate type flame arrester protects tank contents by preventing the propagation of fire and explosion into tank. Easily accessible for cleaning without disturbing original factory alignment.

LOW-COST MAINTENANCE
Modern swing-bolt design permits quick removal of vent covers and weatherhoods for visual inspection or cleaning.

VAPOR CONSERVATION TYPE VENTS



Similar in design to the Non-Conservation Vents but incorporate relief valves in the vent housing which conserve vapors to reduce costly evaporation losses. Valves retard intake of air and escape of vapors as tank normally breathes in and out.

IN-LINE VENTS



An exclusive Protectoseal design approved for installation at varying distances from open end of vent pipe. Suitable for inside tank house installations on storage or processing tanks, bleed lines, bleed tanks or other waste gas lines.

PROTECTOSEAL MANUFACTURES ALL TYPES OF FLAMMABLE LIQUID STORAGE TANK VENTING AND OPERATING EQUIPMENT.

SEE CHEMICAL ENGINEERING CATALOG, PAGE 1501

West Coast Warehouse: Los Angeles, Calif.
In Canada: Safety Supply Co., Toronto.

The Protectoseal Company,
1948 S. Western Ave., Chicago 8, Ill.

Please send me "Venting Fundamentals"

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

Pumps, Blowers & Compressors

TECHNICAL LITERATURE

Pumps, Slurry—
Ventilators, Centrifugal Roof

Pumps, Slurry.....Slurry pumps handle extremely thick slurries with high specific gravities. Provide long operating life with little or no maintenance. Covers features and selection data in Bulletin No. 185.
358A Morris Mach. Wks.

Pumps, Slurry.....Complete details of the Manzel SP-90 Slurry Pump. This new pump prevents setting; pumps slurries at rates varying from over 15 gals. maximum to 2½ gals. minimum per hour.
358B Manzel Div.

Pumps, Slurry & Sludge.....Where abrasive wear is usually severe or could cause severe damage if the casing wore out, a Lawrence Lined Slurry Pump provides the answer. Full details in Bulletin 207-4.
358C Lawrence Pumps.

Pumps, Stock.....Booklets cover a wide range of stock pumps for pulp & paper mill services. Includes specifications, sectional views with indicated features, dimensions charts, etc. Bulletins 231, 235, 243.
358D Warren Steam Pump Co.

Pumps, Submersible.....Full details of new Series C line of high capacity submersible water supply pumps. Offers advantages of easy installation, low running costs, high capacities, etc. Request Bulletin No. B1000.
358E Sumo Pumps.

Pumps, Submersible Booster.....Bulletin describes new submersible booster pump for industrial and municipal use. Includes data on pump and motor features, specifications, selection tables, applications, etc.
358F Layne & Bowler Pump Co.

Pumps, Sump.....Handle corrosive liquids for years without trouble. Available in sizes from 1 to 10-inch discharge with capacities ranging up to 3,000 gpm and heads up to 140 feet. Data in illustrated Bulletin 4600-A.
358G Deming Co.

Pumps, Sump.....New bulletin helps to select the most efficient unit for a specific sump job. Contents: construction features, information on Single & Duplex types etc. Request copy of Bulletin No. 4600.
358H Deming Co.

Pumps, Sump.....Three advantages are featured in the "Buffalo" sump pump: easy installation; always in prime (since there is no suction lift); & simplified maintenance. For details, request Bulletin No. 963-F.
358I Buffalo Pumps.

Pumps, Vacuum.....Available in complete range of types and sizes to meet any vacuum need. Offer fast "pump-down," high efficiencies, quiet, vibrationless operation, long service life. For details, see Bulletin 89.
351 *Beach-Russ Co.

Pumps, Vacuum.....NRC rotary gas ballast pumps keep their original high efficiency even when pumping troublesome vapors. Includes complete engineering information in company's profusely illustrated Bulletin.
358J Naresco Equipment Corp.

Pumps, Vacuum.....Tells how & why company developed new line of diffusion & booster pumps to fill need for faster pumping in pressure range where most high vacuum processing is now being done. Bulletin No. 756.
358K F. J. Stokes Mach. Co.

Pumps, Vacuum.....Company makes available information on its line of dependable, low-maintenance, vacuum pumps. Catalog 751 on pumps & problems, & Booklet 755 on their care are available upon request.
358L F. J. Stokes Mach. Co.

Pumps, Vacuum.....Important operating factors, which add up to R-C "plus-ability", account for rapidly increasing use of positive displacement vacuum pumps for industrial processing. Bulletin 50-B-13.
358M Roots-Connersville Blower.

Pumps, Vacuum, Steam Jet.....Profusely illustrated, 12 p. describes both condensing & non-condensing two-stage units. Covers applications, features, construction materials, operation, etc. Request Bulletin No. 5H2.
358N Schutte & Koerting Co.

Pumps, Vertical.....Features Lawrence 8-in vertical pump for handling molten salts at 850°F and 2-inch vertical pump for handling liquid oxygen at —297°F. For further information, request Bulletin 203-7.
339d *Lawrence Pumps.

Pumps, Vertical Turbine.....Furnishes detailed information on line of vertical turbine pumps. Includes data concerning applications of pumps in air conditioning systems and for many other uses. Bulletin 4700.
358O Deming Co.

Pumps, Vertical Turbine.....Tested & proved in thousands of installations of all types, Layne pumps lead the field in performance. To know the reason why, request your copy of Product Bulletin No. 100.
358P Layne & Bowler, Inc.

Pumps, Vertical Turbine.....Vertical turbine pumps cut installation and operating costs in cooling tower service. Available in single or multi-stage units. For complete information, see Bulletin 7228.
358Q Ingersoll-Rand.

Pumps, Wet Pit.....Illustrated, 16 p. covers line of heavy duty wet pit pumps for applications such as drainage, flood water effluent boiler blow-off, hot wells, acids & alkalis. Request Catalog No. 3007.
358R Yoemans Bros. Co.

Ventilating Units.....Feature wide range, low cost handling of variety of ventilating & industrial applications requiring low & medium ranges of air capacities at quiet-efficient operation. 20 p. Bulletin UVS 103.
358S General Blower Co.

Ventilators.....The Bifurcator Roof Ventilator shields its fan motor from the destructive rush of hot or corrosive fumes. Designed for easy roof curb mounting. For details, request Bulletin No. DB-37-55.
358T DeBothezat Fans Div.

Ventilators, Centrifugal Roof.....General offers an attractive, efficient backward blade centrifugal roof ventilator. Covers design—improved features of construction—in 8 p. illustrated Bulletin No. CRV 101.
358U General Blower Co.

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* From advertisement, this issue.

Safety Equipment

Extinguishing System

Pressure-operated carbon dioxide type. (359A)

. . . A new flexible extinguishing system operates on a rate-of-temperature-rise principle. It uses carbon dioxide under 850 psi. pressure both for power and extinguishing. Control heads on two pressurized carbon dioxide storage tanks, triggered by hot air, release gas to manifold piping opening valves of other tanks.—*Walter Kidde & Co., Belleville 9, N. J.*

Fire Monitor

Powerful tool against plant fires. (359B)

. . . Adapted from a hydraulic mining device, the Intelli-Giant fire monitor discharges 2,000 gpm. water at effective range of 300 ft. Yet, control is balanced so well that a child can adjust direction of discharge. Device is operated by hydraulic pistons with power furnished by diverted water pressure. Within seconds, tip of nozzle can cover horizontal travel pattern of 270 deg., 12 deg. vertical arc.—*Chiksan Co., Brea, Calif.*

Glove, Industrial

Comfort in rubber. (359C)

. . . New Stanzoil NS-35 neoprene glove features thousands of tiny cotton particles bonded to the inside. The flock lining gives maximum comfort without decreasing finger dexerity.—*Pioneer Rubber Co., Willard, Ohio.*

Harness, Safety

Halts falls from stagings. (359D)

. . . A new automatic safety device permits free movement of worker yet provides absolute safety where falls are a hazard. Device consists of a sturdy metal box containing an aluminum drum with an automatic safety brake and reel. Box is attached to the worker with nylon suspender type harness. — *Wind-Kor Automatic Safety Device Co., Chicago, Ill.*

Hose, Fire

Stands rough use. (359E)

. . . New all-Dacron, neoprene-impregnated fire hose, tabbed Fyr-Fyter Tuff-Weave, withstands oil, chemicals, mildew and rough use. Test pressure is 500 lb. per 50 ft. length—*Fyr-Fyter Co., Dayton 1, Ohio.*

Signs, Prevention

In three self-sticking sizes. (359F)

. . . Self-sticking accident prevention signs are now available in three standard sizes: 5 x 14 in., 3½ x 10 in., and 2¼ x 9 in. Signs include both basic purpose signs such as "Danger" and specific purpose signs such "Caution, Wear Eye Protection."—*W. H. Brady Co., Milwaukee 12, Wis.*

TECHNICAL LITERATURE

SAFETY EQUIPMENT

Accident Prevention Signs.....Company has assembled over 2,200 of its stock metal signs and safety tags for illustration in its new 48 p. catalog. Signs illustrated in actual colors in which they are available.
359G Ready Made Sign Co.

Apparel, Industrial.....Resistall acid & caustic resistant work clothes of Union Carbide Dynel & Du Pont Orlon was proved to outlast wool & cotton 20-1 under specific chemical conditions. Offers Catalog.
359H Resistall Work Clothes.

Apparel, Industrial.....Super-Tough hats & caps provide you that extra protection—both external & internal. Learn the full story on revolutionary, scientific advance in head protection in new Manual.
359I Willson Products.

Apparel, Industrial....."Asbestos Safety Clothing" describes in detail the various articles of safety apparel: asbestos suits, helmets, aprons, leggings, overshoes, Wearbestos gloves and mittens, etc. 12 p.
359J Johns-Manville.

Apparel, Industrial.....16 p. catalog and reference manual contains news, facts and illustrations relating to the very latest developments in acid-resistant and caustic-resistant work clothes. Includes detail laboratory data.
359K Worklon, Inc.

Burn Kits.....Newly published reference describes the M-S-A Foille Burn Kit . . . for immediate treatment of all types of burns. Points out advantages of aerosol spray technique. Request Bulletin No. 0402-3.
359L Mine Safety Appliances Co.

Clothing, Protective....."Protectocoat" won't peel or crack in normal work use. Won't stick in hot weather or become stiff in cold & is easily cleaned. Contains complete information in new Brochure.
359M American Optical.

Fire Extinguishers.....Efficient, dependable & superior in design, new expanded line of Kidde extinguishers now make it easier for you to choose the right extinguisher for every fire hazard. P-8 Catalog.
359N Walter Kidde & Co.

Fire Extinguishing Systems.....36 p. contains information about Foamite Airfoam fire extinguishing equipment . . . for combatting various types of flammable liquid fires. Features numerous illustrations.
359O American LaFrance Corp.

Fire Extinguishing Systems.....Describes a completely new, pressure-operated carbon dioxide fire extinguishing system (rate-of-rise type)—suitable for flammable liquid or electrical hazards. Illustrated, 16 p.
359P Walter Kidde & Co.

Fire Protection....."Engineered Special Hazard Fire Protection" covers methods of fire detection, fire prevention, fire control and fire extinguishment in the field of Special Hazard fire protection. Catalog 73.
359Q "Automatic" Sprinkler.

Fire Protection Systems.....Automatic fog system protects you around the clock, sounding alarms & putting water to work instantly wherever & whenver needed. 'Fire Can Destroy Your Business" upon request.
359R Blaw-Knox Co.

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1956 INVENTORY

TECHNICAL LITERATURE

Goggles, Safety—

Safety Services

Goggles, Safety.....Newly designed and engineered—with greater protection than ever—greater field of vision than ever—more wearer acceptability—many new features—etc. Illustrated Brochure.
360A American Optical Co.

Masks, Face.....Describes line of IPCO Nitrometer Masks . . . face masks of many practical uses. Used to advantage in the numerous trades and operations requiring protection to the eyes and face. Illustrated.
360B Industrial Products Co.

Numbers & Letters.....Company announces the development of individual, self-sticking Numbers and Letters, in six sizes from ¼" to 5" high, mounted on handy dispenser cards. Request 6 p. Bulletin No. 165.
360C W. H. Brady Co.

Safety Devices.....New Wind-Kor automatic safety device permits free movement yet provides absolute safety for workers on jobs where falls are hazards. Offers complete details, test reports and illustrated literature.
360D Wind-Kor Automatic Safety.

Safety Equipment.....Exclusive features in No. 90A Monogoggles include: high flexibility; easy-to-change lens; wearing comfort; lightweight convenience; superior impact resistance; etc. Request Bulletin.
360E Willson Products.

Safety Equipment.....Scott Air-Paks cut repair & maintenance costs. On hazardous jobs, Air-Paks afford management & labor a greater measure of protection. "Scott Air-Paks Save Money, Man Hours . . ."
360F Scott Aviation Corp.

Safety Equipment.....Specification Sheet describes film badges for personnel protection. Badges indicate amount of radiation which laboratory & other workers are receiving from x-rays or radioactive isotopes.
360G Nuclear Instrument & Chem.

Safety Equipment.....Describes Watchemoket "Eye Savers." Includes: advantages of modern plastics for safer, low cost, eye protection; safety spectacles for lightweight comfort and long wear. Illustrated Bulletin 200.
360H Watchemoket Optical Co.

Safety Practices.....'30 Short Safety Talks for Tailboard Meetings" covers specific problems in each of the fields of gas, water, electricity & communications—as well as general problems encountered by all.
360I National Safety Council.

Safety Practices.....'Five Minute Safety Talks for Foremen" (Book No. 3) includes data on off-the-job safety, attitudes toward safety, etc. It covers a wide range of subjects; specific situations as well as general.
360J National Safety Council.

Safety Services.....Illustrated, 68 p. provides a list of periodicals, newsletters & a complete library of technical & administrative publications covering occupational accident prevention. Service Guide 2.1.
360K National Safety Council.

→ Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.



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Companies: Page 379

Your Company Index is a complete alphabetical listing of all companies offering products for sale and/or mentioned in the editorial pages of this Inventory Issue. This combined index will locate advertisers for you. It also identifies manufacturers of all new equipment and chemicals mentioned in this issue.

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What the Code Means . . .

Each item has a code that is the key to its location in this Inventory Issue. The numerals show the page where you'll find the item mentioned. The letters A, B, C and a, b, c identify different items on an editorial page or within an ad.

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Can't remember?

Can't quite recall who built that new plant, who developed that new process? Well, then, take a crack at finding the answer in this issue's Inventory of New Plants & Facilities (p. 7) or Inventory of New Processes & Technology (p. 45). They're designed to help you.

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Need some equipment?

Then you'll find this issue's Inventory of New Equipment right up your alley. It's a digest of the past year's major new developments in process equipment, the first complete roundup of its kind. You'll find it a handy tool for years to come.(p. 145).

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Here's a complete index to all chemicals, materials, equipment, services and literature advertised in this issue or mentioned editorially in the Chemical & Materials, Equipment & Accessories Inventories or listed in Technical Literature Sections. It is, therefore, a master index to major developments in each of these areas during the past fiscal year ending July 1956. Items are arranged alphabetically and categorized for your convenience.

What the Code Means . . .

Each item has a code that is the key to its location in this Inventory Issue. The numerals show the page where you'll find the item mentioned. The letters A, B, C and a, b, c identify different items on an editorial page or within an ad.

For More Information . . .

You can get—and get fast—more information on any item in this master index by using the Reader Service postcards that follow the end of the index. Simply write in the item's code number on the card, then mail to us. Answers will come to you direct from the manufacturer. Use the cards as often as you please during the coming year.

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Washington Steel Corp. 216*, 236H
Watchemoket Optical Co. 360H

More Information . . .

You can get more information on any of the products mentioned or advertised. Use the code numbers identifying each item. Your Product Index (p. 362) will find specific products for you. Then write code numbers on one of the postcards following this index. Mail it to us and prompt answers will be sent direct to you from the manufacturers.

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Porter, H. K. Co. 267C, 292a-h*
Waukesha Foundry Co. 224D, 357D
Waverly Petroleum Prods. 214E
Weatherhead Co. 262D
Webb Corp. 259A
Wedgeplug Valve Co. 288U
Weighing Components, Inc. 250C, 259D
Weinman Pump Mfg. Co. 351D
Wellington Sears Co. 321F
West Chester Chemical Co. 217C
West End Chem. Co. 140F, 141D
West Penn Elec. System 43M
Western Precipitation Corp. 184V
Western Supply Co. 186E
West Va. Pulp & Paper Co. 130V, 133G, 140V
Westinghouse Elec. Corp. 151B, 228EE, 334I, 342D, 356M
Westinghouse Sturtevant Div. 304I
Weston Elec. Instrument ...207H, 207Q, 211K, 212E
Wes-vaco Mineral Prods. 128L
Wheaton Brass Works 274Q
Wheelabrator Corp. 164C, 172H
Wheelco Instrument Div. 197D
Wheeler Mfg. Co. 348L, 348O
Whiting Corp. 252C, 260F
Whitelock Mfg. Co. 184Y, 186A, 316X
Wickes Boiler Co. 184M
Wiedeke Co., Gustav. 241B, 241C
Wiegand Co., Edwin **179a-k***, 186G, 186HH 191G, 193D, 194C
Wilfley & Sons, A. R. 348V
Will Corp. 43J, 210Y
Wm. Bros Boiler & Mfg. Co. 182G, 184H, 228S
Williams & Co., C. K. 132N
Williams Colors & Pigments 136E
Williams Gauge Co., Inc. 267G
Williams & Green 256W
Williams Patent Crusher & Pulverizer Co. 321R 322F, 322G
Williamson Development Co. 201A
Williamson, Inc., T. D. 264H
Willson Products, Inc. 359I, 360E
Wilmington Plastics Co. 261H
Wilson Co., T. 213G, 241D
Wind-Kor Automatic Safety Device Co. .359D, 360D
Witco Chem. Co. 105F, 126F, 126H, 126W, 130N 130Y, 130HH, 130II, 131DD 132E, 141J, 142M, 142R
Wolf & Co., Jacques 128A, 131KK, 131LL 132B, 135C, 137EE
Wolverine Tube Div. 194J, 278J
Wooster Sealkote Co. 232Y, 232Z
Worklon, Inc. 359K
Worthington Corp. 161G, 147D, 147E, 316T 336B, 344-5*, 348T, 348EE 352G, 352H, 353-4*, 357U
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Wynko Mfg. Co. 213D
Wyssmont Co. 315E, 316B

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Yale & Towne Mfg. Co. 260L, 260V
Yarnall-Waring Co. 194W, 194X, 194Y, 274S 274T, 331G
Yeomans Brothers Co. 294B, 358R
York Corp. 342M
York Co., Otto H **303a-j***, 313A
York Process Equipment Corp. 300F
Young Radiator Co 178A, 183*, 183F, 186Y
Youngstown Welding & Engrg. 43B

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Zonolite Co. 143Y

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Look how easy it is

to replace the shaft seal on a Lightnin Mixer

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You get them—when you mix with LIGHTNIN Mixers equipped with LIGHTNIN rotary mechanical seals.

This LIGHTNIN seal is a one-piece cartridge assembly. Anyone who can handle a wrench can unbolt it from the mixer shaft, and bolt in a replacement seal cartridge, *in minutes.*

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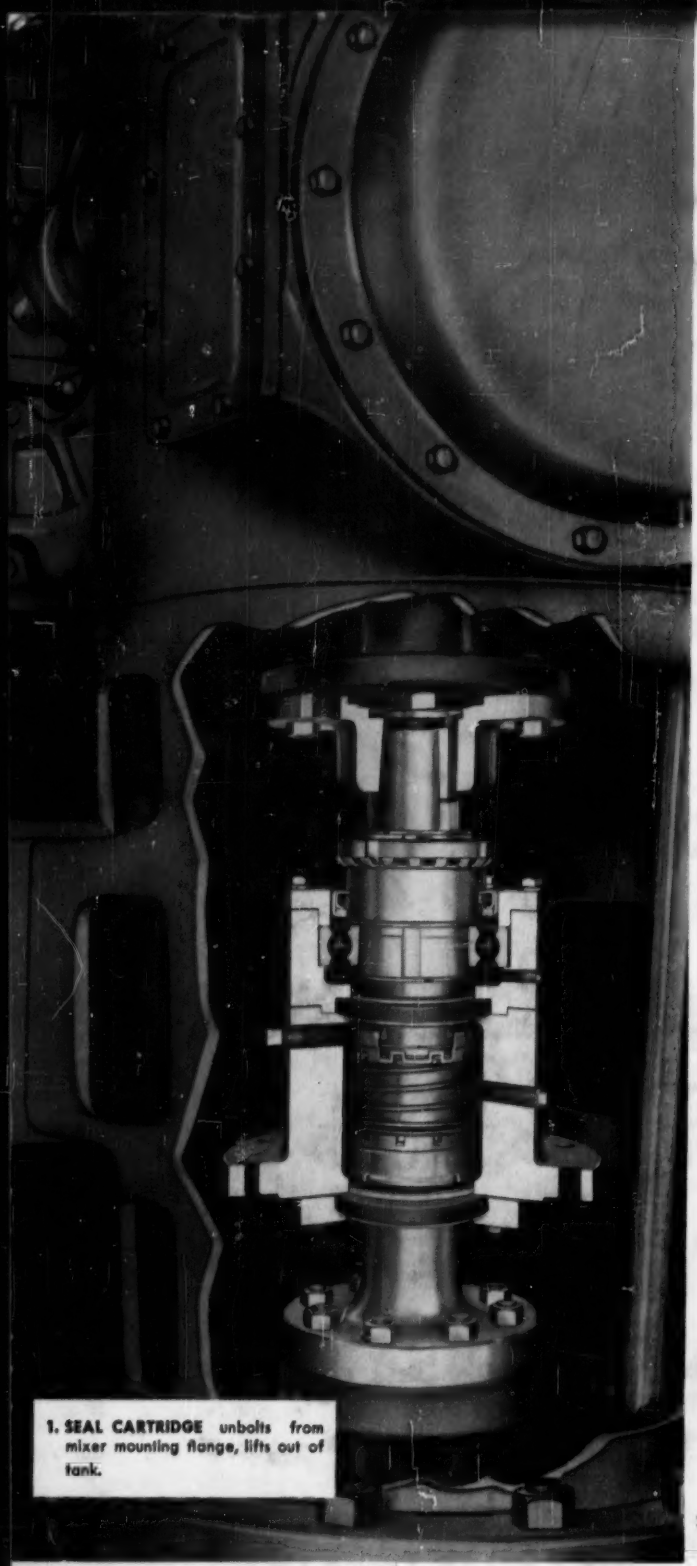
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You get all these basic advantages of rotary mechanical sealing, too:

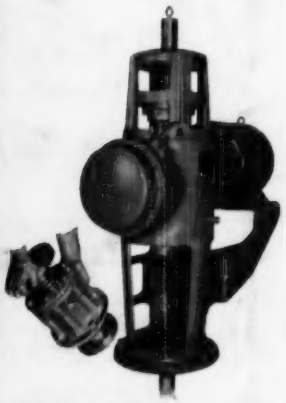
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You can get LIGHTNIN Mixers with seal assemblies for a full range of applications, pressures, and temperatures. There's a choice of efficient automatic systems for seal lubrication. You can always get replacement seal assemblies from MIXCO factory stocks, on short notice. Rapid seal repair service, too.

Your LIGHTNIN Mixer representative will gladly show you how these easy-to-replace seals can cut your fluid mixing costs. You'll find him listed in Chemical Engineering Catalog. Or write us direct.



1. SEAL CARTRIDGE unbolts from mixer mounting flange, lifts out of tank.



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3. NEW SEAL CARTRIDGE is bolted in place, mixer returned to operating position. Shaft alignment is *built-in.*

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